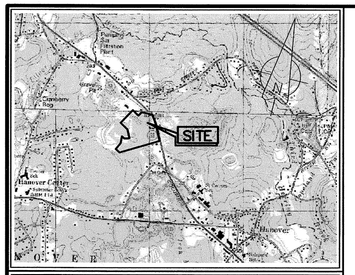
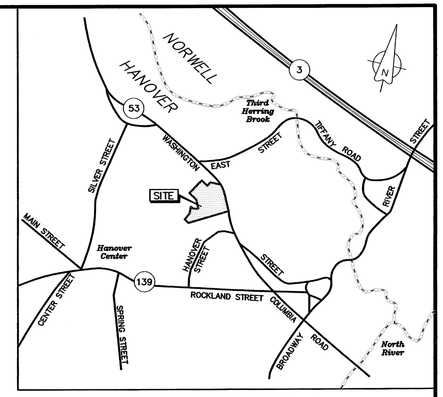
VILLAGE SQUARE
SITE DEVELOPMENT
IN
HANOVER, MASSACHUSETTS



LOCATION MAP SCALE: 1" = 0.5 MILE



SITE LOCUS
NOT TO SCALE

DRAFT

INFORMATION ONLY

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20	ACCESS EASEMENT PLAN

OWNER/APPLICANT

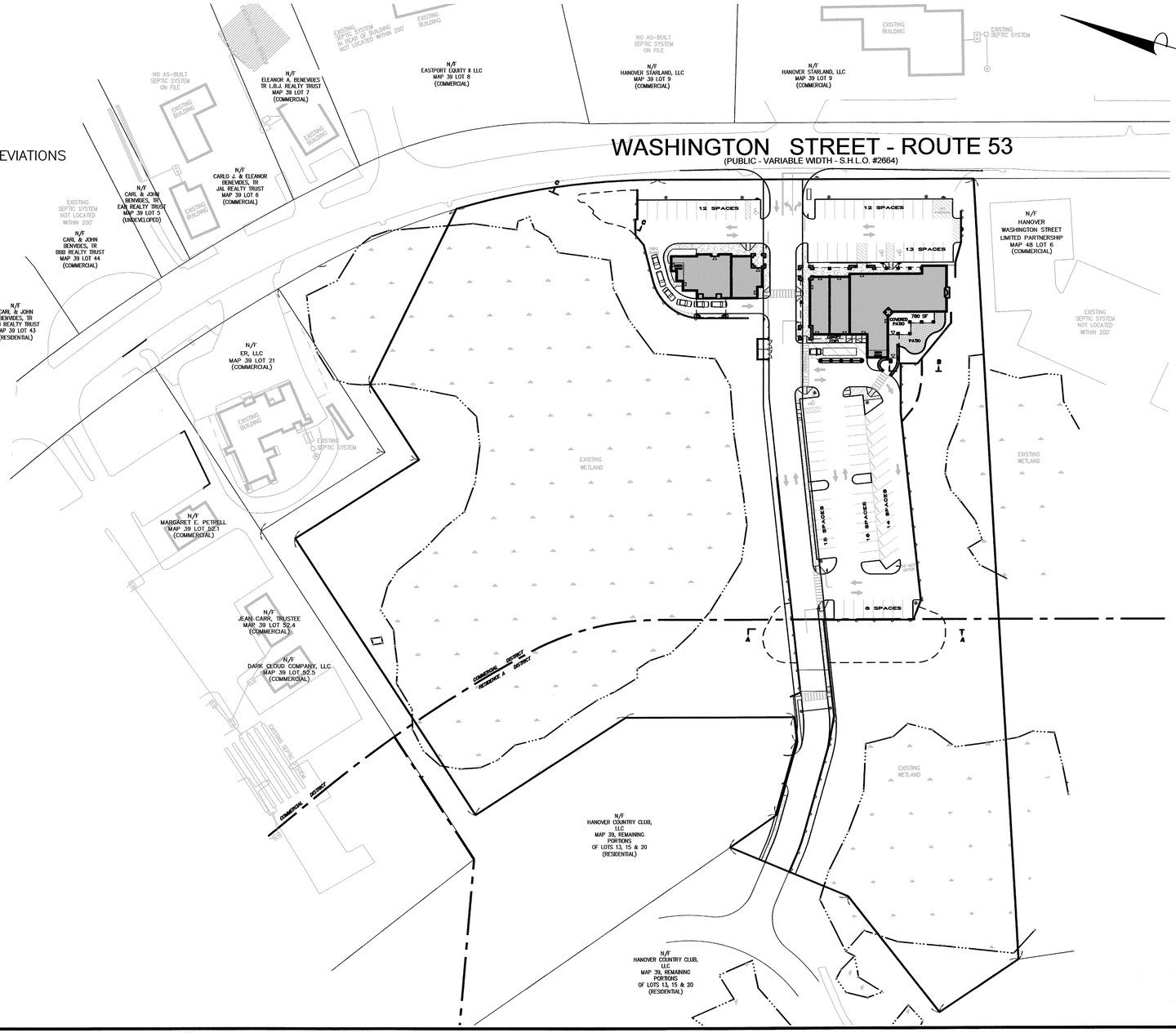
WITSOP–1, LLC
150 LONGWATER DRIVE, SUITE 202
NORWELL, MA 02061
TEL: (781) 871–7000

CIVIL ENGINEER

McKENZIE ENGINEERING GROUP, INC.
150 LONGWATER DRIVE, SUITE 101
NORWELL, MA 02061
TEL: (781) 792–3900

LAND SURVEYOR

AABERG ASSOCIATES, INC.
80 WASHINGTON STREET, UNIT C–17
NORWELL, MA 02061
TEL: (781) 878–6161



GRAPHIC SCALE
0′ 60′ 120′ 180′
(IN FEET)
1 inch = 60 ft.

REVISION	DATE	DESCRIPTION	BY	APPR
5	12/21/05	REVISIONS PER PLANNING BOARD CONDITIONS	NAC	BCM
4	9/19/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM
3	9/12/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM
2	8/19/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM
1	7/22/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM

APPLICANT:

WITSOP–1, LLC
150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

PROJECT NO.: 21–147	DATE: MARCH 31, 2005
SCALE: 1"=60'	DWG FILE NAME: 21–147.3main.dwg
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

PREPARED BY:
McKENZIE ENGINEERING GROUP, INC.
PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT
325 CENTRAL STREET, SAUGUS, MASSACHUSETTS 01906
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150 LONGWATER DRIVE, SUITE 101, NORWELL, MASSACHUSETTS 02061
PHONE: (781) 792–3900 FACSIMILE: (781) 792–0333

COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
CIVIL
No. 39917
REGISTERED PROFESSIONAL ENGINEER

DRAWING TITLE: **COVER SHEET**

DWG. NO. **1**

ABBREVIATIONS

ABAN	ABANDONED
ADJ	ADJUST
APPROX	APPROXIMATE
ASPH	ASPHALT
ACCMP	ASPHALT COATED CORRUGATED METAL PIPE
BOW	BOTTOM OF WALL
BS	BOTTOM OF SLOPE
CAP	CORRUGATED ALUMINUM PIPE
CBN	CATCH BASIN
CB/DH	CONC. BOUND/DRILL HOLE
CB/EPLP	CB/ESCUTCHEON
CCB	CAPE COD BERM
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
CLF	CHAIN LINK FENCE
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
COND	CONDUIT
CPP	CORREGATED POLYETHYLENE PIPE
D	DRAIN
DMH	DRAIN MANHOLE
DW	DOMESTIC WATER SERVICE
DIP	DUCTILE IRON PIPE
E	ELECTRIC
ECC	EXTRUDED CONCRETE CURB
ELEV	ELEVATION
EXIST	EXISTING
FES	FLARED END SECTION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FND.	FOUND
FND	FOUNDATION
FS	FIRE WATER SERVICE
G	GAS
GG	GAS GATE
GP	GUARD POST
GR	GUARD RAIL
GRAN.	GRANITE
GS	GAS SERVICE
HH	HANDHOLE
HWL	HEADWALL
HYD	HYDRANT
INV	INVERT
I.P.	IRON PIN
I.R.	IRON ROD
LS	LANDSCAPE
MAX	MAXIMUM
MIN	MINIMUM
MHB	MASS. HIGHWAY BOUND
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OHW	OVERHEAD WIRE
PB	PULL BOX
PCC	PRECAST CONCRETE CURB
PROP	PROPOSED
PS	PARTICLE SEPARATOR
PVC	POLYVINYLCHLORIDE PIPE
PWW	PAVED WATER WAY
RCP	REINFORCED CONCRETE PIPE
REM	REMOVE
REMOD	REMODEL
RET	RETAIN
RTW	RETAINING WALL
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
S	SEWER
SB/DH	STONE BOUND/DRILL HOLE
SGE	SLOPED GRANITE EDGING
SW	SIDEWALK
T	TELEPHONE
Tr	TREE
TOW	TOP OF WALL
TRANS	TRANSFORMER
TS	TOP OF SLOPE
TSV	TAPPING SLEEVE, VALVE AND BOX
TYP	TYPICAL
UP	UTILITY POLE
US	UTILITY SERVICE
VCP	VITRIFIED CLAY PIPE
VGC	VERTICAL GRANITE CURB
W	WATER
WCR	WHEELCHAIR RAMP
WG	WATER GATE

LEGEND

EXISTING	PROPOSED	
55	100	CONTOUR ELEVATION
X 100.2	X 100.00	SPOT GRADE
27.21 TC, 27.15 BC	27.21TC, 27.15BC	TOP & BOTTOM ELEVATION
21.25	21.25	SPOT ELEVATION W/LEADER
S	S	SEWER MANHOLE (SMH)
D	D	DRAIN MANHOLE (DMH)
		CATCH BASIN (CB)
		HYDRANT (HYD)
		UTILITY POLE (UP)
		LIGHT
		WATER GATE (WG)
		GAS GATE (GG)
		SIGN
EP	EP	EDGE OF PAVEMENT (NO CURB)
TP	TP	TEST PIT AND/OR PERC TEST LOCATION
		TREE
		BOLLARD
D	D	DUMPSTER PAD
	10	PARKING COUNT
		HANDICAP RAMP
		HANDICAP PARKING
	VAN	VAN-ACCESSIBLE HANDICAP PARKING
		BOUND
		GUY POLE
HH	HH	HAND HOLE
PB	PB	PULL BOX
T	T	TELEPHONE MANHOLE
T	T	TRANSFORMER PAD
		TREE LINE
X X X	X X X	CHAIN LINK FENCE
		STONE WALL
		RETAINING WALL
		HAY BALES
△		WETLAND FLAG
		LIMIT OF BORDERING VEGETATED WETLAND, ISOLATED VEGETATED WETLAND OR LIMIT OF INLAND BANK
		LIMIT OF 100 FT WETLAND BUFFER ZONE
		LIMIT OF 35 FT WETLAND NO DISTURB ZONE PER LOCAL WETLAND BY-LAW
		LIMIT OF 50 FT WETLAND NO STRUCTURE ZONE PER LOCAL WETLAND BY-LAW
		LIMIT OF FEMA ZONE "A"/BLSF WETLAND RESOURCE AREA PER LOMR (100-YR FLOODPLAIN)
		LIMIT OF AQUIFER PROTECTION ZONE
		ZONING DISTRICT BOUNDARY
		LIMIT OF WORK

GENERAL NOTES

1. LOCUS OWNER: WITSOP-1, LLC
   150 LONGWATER DRIVE, SUITE 202
   NORWELL, MA 02061

2. DEED BOOK REFERENCE: PLYMOUTH COUNTY REGISTRY OF DEEDS
   BOOK 29162, PAGE 40 & 42

3. LOCUS IS SHOWN AS MAP 39, LOT 12 AND PORTIONS OF LOTS 13, 15 & 20 ON THE TOWN OF HANOVER ASSESSOR'S MAPS. TOTAL LOT AREA = 9.28± ACRES. THE LOCUS IS SHOWN ON A PLAN ENTITLED "APPROVAL NOT REQUIRED SUBDIVISION PLAN, PLAN OF LAND ON WASHINGTON STREET IN HANOVER, MASSACHUSETTS", PREPARED BY MCKENZIE ENGINEERING GROUP, INC. DATED AUGUST 12, 2005 AND ENDORSED BY THE HANOVER PLANNING BOARD ON AUGUST 22, 2005.

4. THE LOCUS IS LOCATED WITHIN THE RESIDENCE A AND COMMERCIAL ZONING DISTRICTS. A PORTION OF THE LOCUS IS LOCATED WITHIN THE WATER RESOURCE PROTECTION OVERLAY DISTRICT (AQUIFER PROTECTION ZONE). A PORTION OF THE LOCUS IS LOCATED WITHIN THE FLOOD PLAIN PROTECTION OVERLAY DISTRICT.

5. LOCUS FALLS WITHIN BOTH ZONE C AND ZONE A AS SHOWN ON THE CURRENT FIRM COMMUNITY PANEL NO. 250266 0004 B EFFECTIVE DATE SEPTEMBER 7, 2005.

6. WETLANDS WERE DELINEATED BY RIMMER ENVIRONMENTAL CONSULTING IN MAY 2002 THROUGH SEPTEMBER 2003 & NOVEMBER 2004. PORTIONS OF THE WETLANDS WERE REVIEWED UNDER AN ORDER OF RESOURCE AREA DELINEATION ISSUED BY THE HANOVER CONSERVATION COMMISSION ON MAY 19, 2004 (DEP FILE SE 31-794, LOCAL BL 03-57).

7. SOILS ANALYSIS WAS PERFORMED IN OCTOBER AND NOVEMBER 2004 BY MCKENZIE ENGINEERING GROUP, INC. FOR PURPOSES OF VERIFYING SUBSURFACE CONDITIONS FOR STORMWATER MANAGEMENT SYSTEMS. SOILS ANALYSIS AND PERCOLATION TESTING WAS PERFORMED IN JANUARY, 2005 BY MCKENZIE ENGINEERING GROUP, INC. FOR PURPOSES OF VERIFYING SUBSURFACE CONDITIONS FOR THE SOIL ABSORPTION SYSTEM.

8. PLANS AND TOPOGRAPHIC INFORMATION WERE PREPARED FROM EXISTING INFORMATION AND GROUND SURVEY CONDUCTED BY AABERG ASSOCIATES, INC. IN MARCH - AUGUST 2004. ALL ELEVATIONS SHOWN REFER TO 1983 N.A.V.D. DATUM.

9. ALL LOCATIONS OF SUBSURFACE UTILITIES AND STRUCTURES WERE OBTAINED FROM AVAILABLE TOWN AND UTILITY RECORDS. THE SIZE, TYPE AND LOCATION OF UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL PROPERLY LOCATE THE UTILITIES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN UTILITY INFORMATION BY CONTACTING DIGSAFE (888-344-7233). THE CONTRACTOR SHALL EXCAVATE TEST PITS TO VERIFY UTILITY LINE LOCATIONS AS NECESSARY.

10. ANY CHANGE IN THE FIELD CONDITIONS SHOULD BE REPORTED TO THE ENGINEER TO INSURE THAT ANY MODIFICATIONS TO THE ORIGINAL DESIGN ARE PROPER AND ADEQUATE TO SERVE THE PROJECT'S NEEDS AND COMPLY WITH THE APPLICABLE STANDARDS AND REGULATIONS.

11. A REGISTERED LAND SURVEYOR SHALL PROPERLY DELINEATE THE PROPOSED LIMIT OF WORK ALONG THE NORTHERN EDGE OF THE PROPOSED DRIVEWAY IN THE FIELD PRIOR TO CONSTRUCTION FOR APPROVAL BY THE TOWN PLANNER AND CONSERVATION AGENT. THE STAKES DELINEATING THE LIMIT OF WORK SHALL NOT BE REMOVED AT ANY TIME DURING CONSTRUCTION.

12. CONSTRUCTION SHALL NOT PROCEED UNTIL THE LIMIT OF WORK HAS BEEN INSPECTED AND APPROVED BY THE TOWN PLANNER AND CONSERVATION AGENT OF THE TOWN, AND UNTIL THE SEDIMENT BARRIER HAS BEEN INSTALLED AT THIS WORK LIMIT. NO WORK SHALL PROCEED INTO THE 35' LIMIT OF NO DISTURB.

COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
CIVIL
No. 36917
REGISTERED PROFESSIONAL ENGINEER

REVISION	DATE	DESCRIPTION	BY	APPR
3	12/21/05	REVISIONS PER PLANNING BOARD CONDITIONS	NAC	BCM
2	8/19/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM
1	7/22/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM

APPLICANT:

WITSOP-1, LLC
150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

PROJECT NO.: 21-147	DATE: MARCH 31, 2005
SCALE: AS NOTED	DWG FILE NAME: 21-147KrampConceptual
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

PREPARED BY:

McKENZIE ENGINEERING GROUP, INC.
PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT
196 CENTRAL STREET, SAUGUS, MASSACHUSETTS 01906
PHONE: (781) 941-2211 FACSIMILE: (781) 941-2662
150 LONGWATER DRIVE, SUITE 101, NORWELL, MASSACHUSETTS 02061
PHONE: (781) 792-3900 FACSIMILE: (781) 792-0333

DRAWING TITLE:

GENERAL NOTES, LEGEND AND ABBREVIATIONS

DWG. NO. **2**


WASHINGTON STREET (PUBLIC - VARIABLE WIDTH - S.H.L.O. #2664)
10" CI WATER (RECORD LOCATION)
N/F ELEANOR A. BENEVIDES TR L.B.J. REALTY TRUST MAP 39 LOT 7 (COMMERCIAL)
N/F CARLO J. & ELEANOR BENEVIDES, TR JAL REALTY TRUST MAP 39 LOT 6 (COMMERCIAL)
L=47.07' R=1840.00'
L=152.93' R=720.00'
L=208.15'
R=720.00'
S 16°25'44" E 322.61'
200.52 S80°19'22"E
LIMIT OF VERNAL POOL BOUNDARY
LIMIT OF BORDERING VEGETATED WETLANDS (BVW) AS DELINEATED BY RIMMER ENVIRONMENTAL CONSULTING IN MAY 2002 THROUGH SEPTEMBER 2003 AND NOVEMBER 2004.
N/F ER, LLC MAP 39 LOT 21 (COMMERCIAL)
#700 EXISTING BUILDING
200.00'
91.92 N40°32'23"E
S 48°57'42" E 150.00'
150.01 S48°57'42"E
LIMIT OF BORDERING LAND SUBJECT TO FLOODING (COMMUNITY PANEL #250266 0004B, EFFECTIVE SEPTEMBER 7, 2005) EL=86
LOT AREA = 404,132 S.F.
UPLAND AREA = 204,644± S.F.
LIMIT OF 35' NO DISTURB ZONE
LIMIT OF 50' NO STRUCTURE ZONE
LIMIT OF 100' BUFFER ZONE
AQUIFER PROTECTION ZONE
EXISTING BUILDING T.O.F.=98.0
APPROX. SEPTIC LOCATION
Existing Dirt Road
N/F HANOVER WASHINGTON STREET LIMITED PARTNERSHIP MAP 48 LOT 6 (COMMERCIAL)
LIMIT OF WETLAND RESOURCE LINE AS SHOWN ON GRADING & DRAINAGE PLAN PREPARED FOR PLANET SUBARU, 10/4/01.
S 70°17'37" W 800.98'
LIMIT OF BORDERING VEGETATED WETLANDS (BVW) AS DELINEATED BY RIMMER ENVIRONMENTAL CONSULTING IN NOVEMBER 2004.
COMMONWEALTH OF MASSACHUSETTS BRADLEY C. McKENZIE CIVIL No. 36917 REGISTERED PROFESSIONAL ENGINEER
GRAPHIC SCALE
0' 30' 60' 90'
(IN FEET)
1 inch = 30 ft.
N/F JEAN CARR, TRUSTEE MAP 39 LOT 52.4 (COMMERCIAL)
N/F DARK CLOUD COMPANY, LLC MAP 39 LOT 52.5 (COMMERCIAL)
N 40°33'46" E 400.01'
337.60 N40°33'46"E
COMMERCIAL DISTRICT
RESIDENCE A DISTRICT
172.09 N16°25'49"W
25.97 N67°28'36"E
182.84 N49°26'14"W
N/F HANOVER COUNTRY CLUB, LLC MAP 39, REMAINING PORTIONS OF LOTS 13, 15 & 20 (RESIDENTIAL)
MATCHLINE

REVISION	DATE	DESCRIPTION	BY	APPR
4	12/21/05	REVISIONS PER PLANNING BOARD CONDITIONS	NAC	BCM
3	9/19/05	ADDED VP LABEL PER ENSR COMMENT	DWK	BCM
2	8/19/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM
1	7/22/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM

APPLICANT:

WITSOP-1, LLC
150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

PROJECT NO.: 21-147	DATE: MARCH 31, 2005
SCALE: 1"=30'	DWG FILE NAME: 21-147KrampConceptual
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

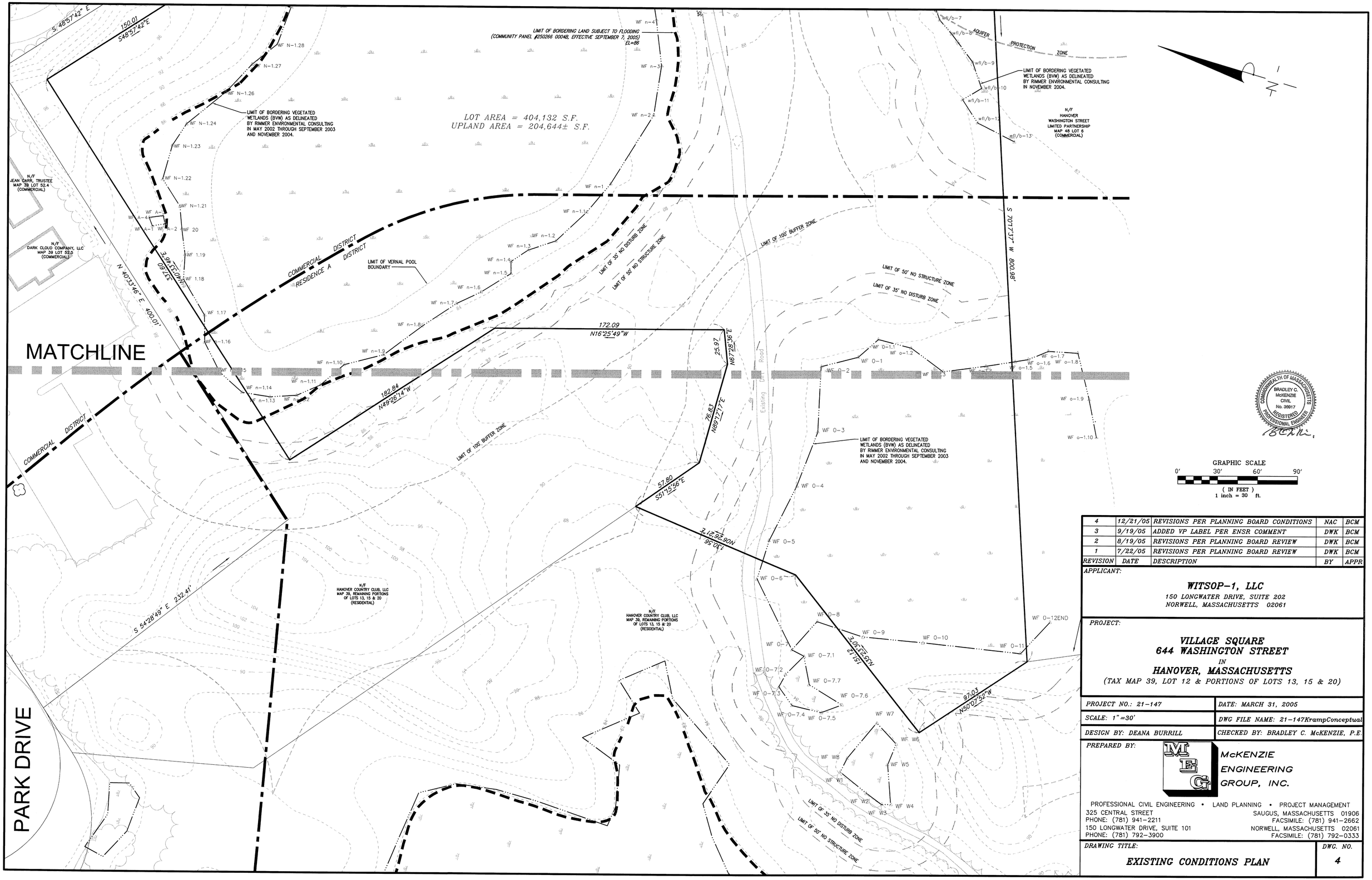
PREPARED BY:

McKENZIE ENGINEERING GROUP, INC.

PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT
325 CENTRAL STREET, SAUGUS, MASSACHUSETTS 01906
PHONE: (781) 941-2211 FACSIMILE: (781) 941-2662
150 LONGWATER DRIVE, SUITE 101, NORWELL, MASSACHUSETTS 02061
PHONE: (781) 792-3900 FACSIMILE: (781) 792-0333

DRAWING TITLE: **EXISTING CONDITIONS PLAN**

DWG. NO. 3



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APPLICANT:

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150 LONGWATER DRIVE, SUITE 202
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VILLAGE SQUARE
644 WASHINGTON STREET
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DRAWING TITLE:

EXISTING CONDITIONS PLAN

DWG. NO.: **4**

WASHINGTON STREET

(PUBLIC - VARIABLE WIDTH - S.H.L.O. #2664)

MATCHLINE

DIMENSIONAL AND DENSITY REGULATIONS

SECTION 7.000 OF ZONING BYLAWS:

CRITERIA	REQUIRED	PROPOSED
MINIMUM LOT FRONTAGE (FT.)	200	530.76
MINIMUM LOT AREA (S.F.)	44,000 (ALL UPLAND)	404,132± (9.28± AC) 204,644± (UPLAND)
MINIMUM FRONT YARD (FT.)	75 incl. 20 Buffer	76.0
MINIMUM SIDE YARD (FT.)	15 + (15 Buffer)	32.0
MINIMUM REAR YARD (FT.)	25 + (50 Buffer)	410.3
MAXIMUM BUILDING HEIGHT (FT.)	35	<35
MAXIMUM NO. OF STORIES	3	1 1/2
MAXIMUM SITE COVERAGE (AREA IN S.F.,%)	Aquifer Prot. Dist. – 50% Commercial – 60% Residential – 30%	88,757± (22.0%) 79,955± (54.7%) 8,802± (15.1%)
MAXIMUM BUILDING COVERAGE (AREA IN S.F.,%)	12%	11,610± (2.9%)

PARKING CALCULATIONS

SECTION 9.070 OF ZONING BYLAWS:

USE	GROSS FLOOR AREA (SQUARE FT.)	REQUIRED	
PROPOSED BUILDING			
BANK	2,195	1 SPACE PER 200 S.F.:	10.98 SPACES
5 EMPLOYEES			5.00 SPACES
RESTAURANT	6,062 (130 SEATS)	1 SPACE PER 3 SEATS.:	43.33 SPACES
10 EMPLOYEES			10.00 SPACES
RETAIL	3,336	1 SPACE PER 200 S.F.:	16.68 SPACES
TOTAL:		REQUIRED:	85.99 SPACES
		PROVIDED:	90.00 SPACES

PAVEMENT MARKINGS LEGEND

BWLL	BROKEN WHITE LANE LINE – 4"
SYCL	SOLID YELLOW CENTER LINE – 4"
DYCL	DOUBLE YELLOW CENTER LINE – 4"
SWLL	SOLID WHITE LANE LINE – 4"
SWEL	SOLID WHITE EDGE LINE – 4"
SWCHL	SOLID WHITE CHANNELIZING LINE – 12"
SL	STOP LINE – 12" WHITE LINE

SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND MASSACHUSETTS HIGHWAY DEPARTMENT STANDARDS FOR THE LATEST SIGN SPECIFICATIONS, TEXT, DIMENSIONS, COLOR AND NOMENCLATURE.

SIGN LEGEND

M.U.T.C.D. LEGEND	WIDTH	HEIGHT	SYMBOL
R1-1	30"	30"	STOP
R5-1	30"	30"	DO NOT ENTER
R3-2	24"	24"	
R6-1R	36"	12"	ONE WAY
W11A-2	24"	24"	

LIMIT OF WETLAND RESOURCE LINE AS SHOWN ON GRADING & DRAINAGE PLAN PREPARED FOR PLANET SUBARU, 10/4/01.

LIMIT OF BORDERING VEGETATED WETLANDS (BVW) AS DELINEATED BY RIMMER ENVIRONMENTAL CONSULTING IN NOVEMBER 2004.

COMMONWEALTH OF MASSACHUSETTS – BRADLEY C. McKENZIE – CIVIL – No. 39917 – REGISTERED PROFESSIONAL ENGINEER

REVISION	DATE	DESCRIPTION	BY	APPR
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APPLICANT:

WITSOP–1, LLC
150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

PROJECT NO.: 21–147	DATE: JUNE 8, 2005
SCALE: 1"=30'	DWG FILE NAME: 21–147KrampConceptual
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

PREPARED BY:

McKENZIE ENGINEERING GROUP, INC.

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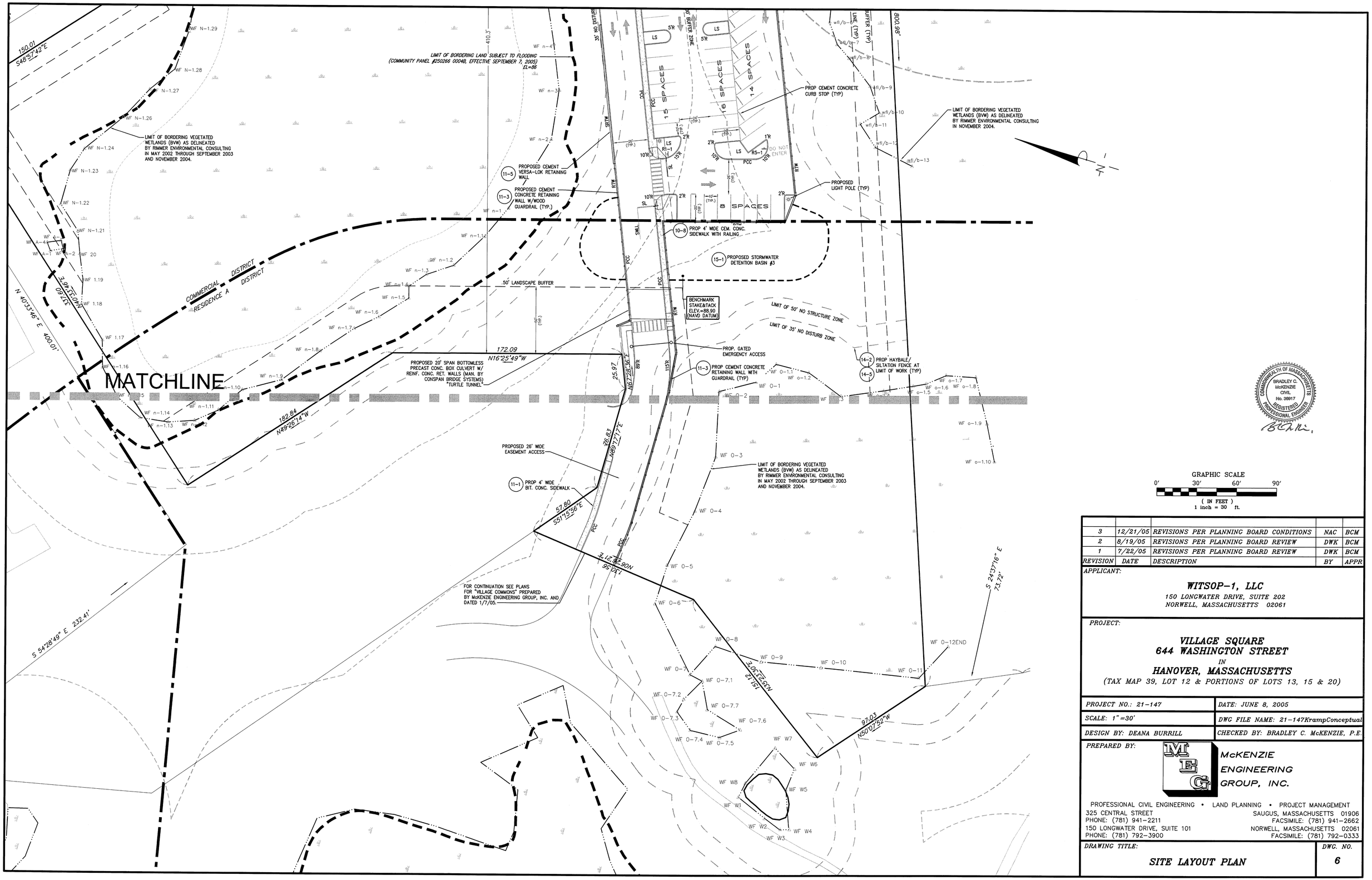
PHONE: (781) 792–3900 FACSIMILE: (781) 792–0333

DRAWING TITLE: **SITE LAYOUT PLAN**

DWG. NO. **5**



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DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

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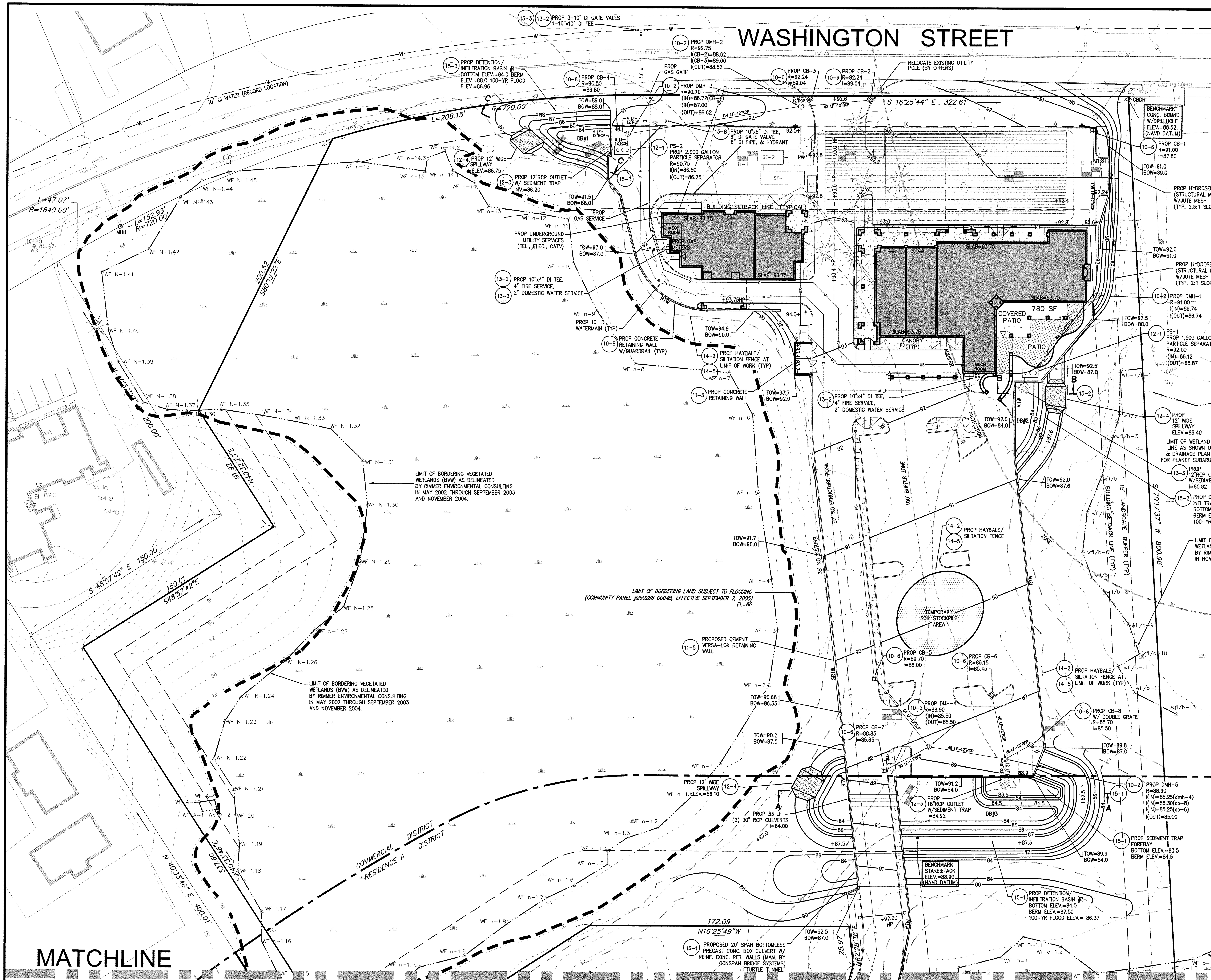
PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT
325 CENTRAL STREET — SAUGUS, MASSACHUSETTS 01906
PHONE: (781) 941-2211 — FACSIMILE: (781) 941-2662
150 LONGWATER DRIVE, SUITE 101 — NORWELL, MASSACHUSETTS 02061
PHONE: (781) 792-3900 — FACSIMILE: (781) 792-0333

DRAWING TITLE:

SITE LAYOUT PLAN

DWG. NO.
6

COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
CIVIL
No. 36917
REGISTERED PROFESSIONAL ENGINEER


WASHINGTON STREET
10" CI WATER (RECORD LOCATION)
PROP 3-10" DI GATE VALES
1-10"x10" DI TEE
PROP DMH-2
R=92.75
I(CB-2)=88.62
I(CB-3)=89.00
I(OUT)=88.52
PROP DETENTION/
INFILTRATION BASIN #1
BOTTOM ELEV.=84.0 BERM
ELEV.=88.0 100-YR FLOOD
ELEV.=86.96
PROP CB-4
R=90.50
I=86.80
PROP GAS GATE
PROP DMH-3
R=90.70
I(IN)=86.72(CB-4)
I(IN)=87.00
I(OUT)=86.62
PROP CB-3
R=92.24
I=89.04
PROP CB-2
R=92.24
I=89.04
RELOCATE EXISTING UTILITY POLE (BY OTHERS)
S 16°25'44" E 322.61'
BENCHMARK
CONC. BOUND
W/DRILLHOLE
ELEV.=88.52
(NAVD DATUM)
PROP CB-1
R=91.00
I=87.80
TOW=91.0
BOW=89.0
PROP HYDROSEED
(STRUCTURAL MIX)
W/JUTE MESH
(TYP. 2.5:1 SLOPE)
PROP 10"x6" DI TEE,
6" DI GATE VALVE,
6" DI PIPE, & HYDRANT
PS-2
PROP 2,000 GALLON
PARTICLE SEPARATOR
R=90.75
I(IN)=86.50
I(OUT)=86.25
PROP 12' WIDE SPILLWAY ELEV.=86.75
PROP 12"RCP OUTLET W/ SEDIMENT TRAP INV.=86.20
TOW=89.0
BOW=88.0
TOW=91.5
BOW=88.0
PROP GAS SERVICE
PROP UNDERGROUND UTILITY SERVICES (TEL., ELEC., CATV)
TOW=93.0
BOW=87.0
BUILDING SETBACK LINE (TYPICAL)
SLAB=93.75
MECH ROOM
PROP GAS METERS
TOW=92.0
BOW=91.0
PROP HYDROSEED
(STRUCTURAL MIX)
W/JUTE MESH
(TYP. 2:1 SLOPE)
PROP DMH-1
R=91.00
I(IN)=86.74
I(OUT)=86.74
PROP 10"x4" DI TEE,
4" FIRE SERVICE,
2" DOMESTIC WATER SERVICE
PROP 10" DI WATERMAIN (TYP)
COVERED PATIO
780 SF
PATIO
CANOPY (TYP)
TOW=92.5
BOW=88.0
PS-1
PROP 1,500 GALLON
PARTICLE SEPARATOR
R=92.00
I(IN)=86.12
I(OUT)=85.87
TOW=92.5
BOW=87.6
PROP CONCRETE RETAINING WALL W/GUARDRAIL (TYP)
TOW=94.9
BOW=90.0
PROP HAYBALE/ SILTATION FENCE AT LIMIT OF WORK (TYP)
PROP CONCRETE RETAINING WALL
TOW=93.7
BOW=92.0
TOW=92.0
BOW=84.0
PROP 12' WIDE SPILLWAY ELEV.=86.40
LIMIT OF WETLAND RESOURCE LINE AS SHOWN ON GRADING & DRAINAGE PLAN PREPARED FOR PLANET SUBARU, 10/4/01.
PROP 12"RCP OUTLET W/SEDIMENT TRAP I=85.82
PROP DETENTION/ INFILTRATION BASIN #2
BOTTOM ELEV.=84.0
BERM ELEV.=87.60
100-YR FLOOD ELEV.= 86.57
LIMIT OF BORDERING VEGETATED WETLANDS (BVW) AS DELINEATED BY RIMMER ENVIRONMENTAL CONSULTING IN NOVEMBER 2004.
S 70°17'37" W 800.98'
15' LANDSCAPE BUFFER (TYP)
BUILDING SETBACK LINE (TYP)
LIMIT OF BORDERING VEGETATED WETLANDS (BVW) AS DELINEATED BY RIMMER ENVIRONMENTAL CONSULTING IN MAY 2002 THROUGH SEPTEMBER 2003 AND NOVEMBER 2004.
200.52
S80°19'22"E
L=208.15'
R=720.00'
L=47.07'
R=1840.00'
L=152.93'
R=720.00'
91.92
N40°32'23"E
200.00'
S 48°57'42" E 150.00'
150.01
S48°57'42"E
N 40°33'46" E 400.01'
337.60
N40°33'46"E
100' BUFFER ZONE
50' NO STRUCTURE ZONE
35' NO DISTURB
TOW=91.7
BOW=90.0
LIMIT OF BORDERING LAND SUBJECT TO FLOODING
(COMMUNITY PANEL #250266 0004B, EFFECTIVE SEPTEMBER 7, 2005)
EL=86
TEMPORARY SOIL STOCKPILE AREA
PROP HAYBALE/ SILTATION FENCE
PROPOSED CEMENT VERSA-LOK RETAINING WALL
PROP CB-5
R=89.70
I=86.00
PROP CB-6
R=89.15
I=85.45
TOW=90.66
BOW=86.33
PROP DMH-4
R=88.90
I(IN)=85.50
I(OUT)=85.50
PROP CB-7
R=88.85
I=85.65
TOW=90.2
BOW=87.5
PROP CB-8
W/ DOUBLE GRATE
R=88.70
I=85.50
TOW=89.8
BOW=87.0
PROP 12' WIDE SPILLWAY ELEV.=86.10
PROP 33 LF (2) 30" RCP CULVERTS I=84.00
TOW=91.2
BOW=84.0
PROP 18"RCP OUTLET W/SEDIMENT TRAP I=84.92
DB#3
PROP DMH-5
R=88.90
I(IN)=85.25(dmh-4)
I(IN)=85.30(cb-8)
I(IN)=85.25(cb-6)
I(OUT)=85.00
PROP SEDIMENT TRAP FOREBAY
BOTTOM ELEV.=83.5
BERM ELEV.=84.5
TOW=89.9
BOW=84.0
BENCHMARK
STAKE&TACK
ELEV.=88.90
(NAVD DATUM)
PROP DETENTION/ INFILTRATION BASIN #3
BOTTOM ELEV.=84.0
BERM ELEV.=87.50
100-YR FLOOD ELEV.= 86.37
COMMERCIAL DISTRICT
RESIDENCE A DISTRICT
172.09
N16°25'49"W
PROPOSED 20' SPAN BOTTOMLESS PRECAST CONC. BOX CULVERT W/ REINF. CONC. RET. WALLS (MAN. BY CONSPAN BRIDGE SYSTEMS) "TURTLE TUNNEL"
TOW=92.5
BOW=87.0
25.97
N67°28'36"E
+92.00 HP
MATCHLINE

COMMONWEALTH OF MASSACHUSETTS — BRADLEY C. McKENZIE — CIVIL — No. 36917 — REGISTERED PROFESSIONAL ENGINEER

NOTES

1. TEMPORARY SEEDING WILL BE PLACED ON THE TEMPORARY SOIL STOCKPILE AND DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY WILL TEMPORARILY CEASE FOR AT LEAST 21 DAYS.

GRAPHIC SCALE

0' 30' 60' 90'

(IN FEET)
1 inch = 30 ft.

REVISION	DATE	DESCRIPTION	BY	APPR
5	12/21/05	REVISIONS PER PLANNING BOARD CONDITIONS	NAC	BCM
4	9/19/05	REL'D LOW, ADDED BARRIER AROUND STOCKPILE	DWK	BCM
3	9/12/05	ADDED WOOD FENCE NOTE FOR DUMPSTER AREA	DWK	BCM
2	8/19/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM
1	7/22/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM

APPLICANT:

WITSOP-1, LLC
150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

PROJECT NO.: 21-147	DATE: MARCH 31, 2005
SCALE: 1"=30'	DWG FILE NAME: 21-147KrampConceptual
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

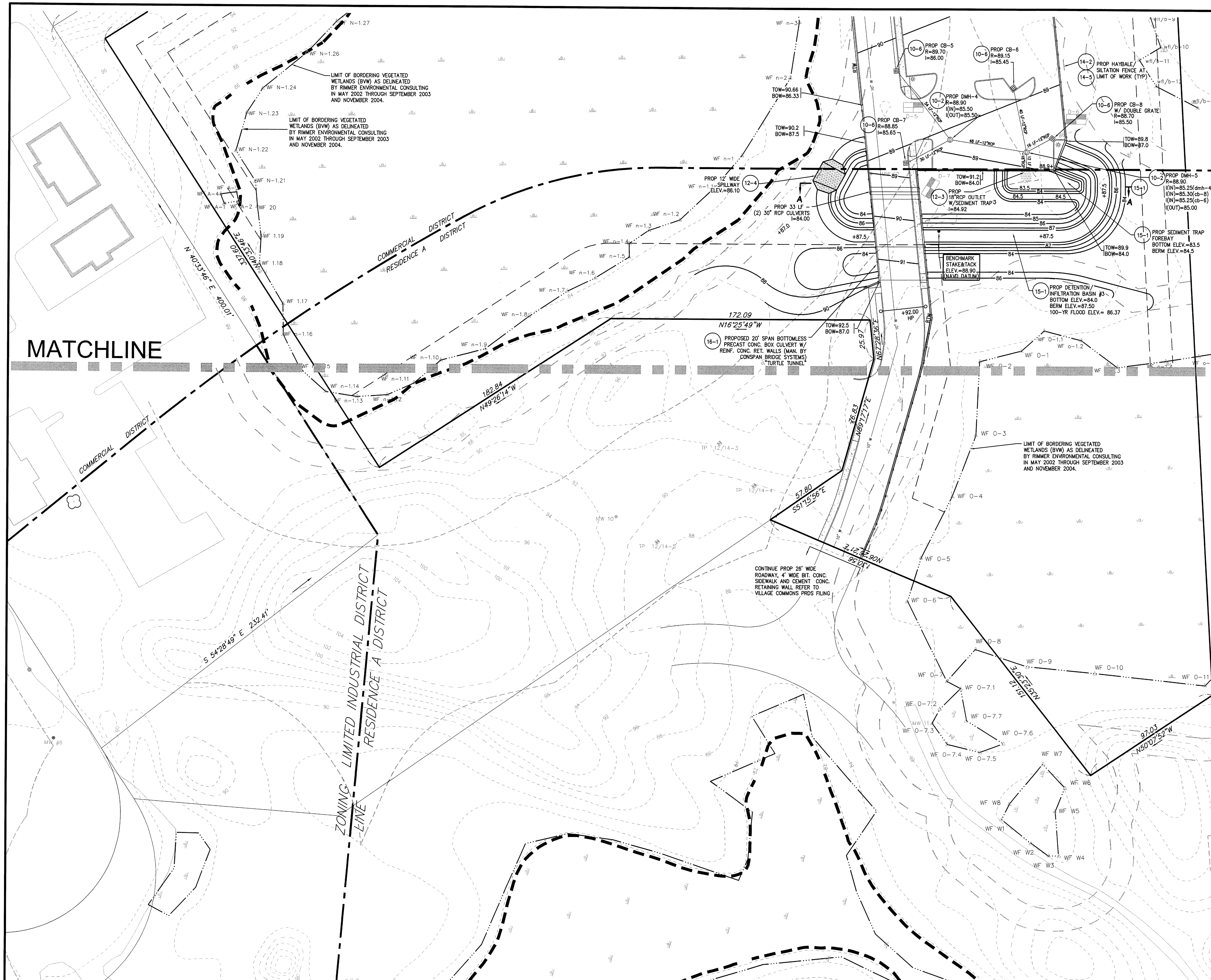
PREPARED BY:

McKENZIE ENGINEERING GROUP, INC.

PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT
325 CENTRAL STREET, SAUGUS, MASSACHUSETTS 01906
PHONE: (781) 941-2211 FACSIMILE: (781) 941-2662
150 LONGWATER DRIVE, SUITE 101, NORWELL, MASSACHUSETTS 02061
PHONE: (781) 792-3900 FACSIMILE: (781) 792-0333

DRAWING TITLE: **GRADING AND UTILITY PLAN**

DWG. NO. 7


MATCHLINE
LIMIT OF BORDERING VEGETATED WETLANDS (BVW) AS DELINEATED BY RIMMER ENVIRONMENTAL CONSULTING IN MAY 2002 THROUGH SEPTEMBER 2003 AND NOVEMBER 2004.
COMMERCIAL DISTRICT
RESIDENCE A DISTRICT
N 40°33'46" E 400.01'
337.60 N40°33'46"E
172.09 N16°25'49"W
182.84 N49°26'14"W
25.97 N67°28'36"E
76.83 N89°17'17"E
57.80 S51°15'56"E
130.56 N06°26'21"E
151.12 N35°23'30"E
97.03 N50°07'52"W
S 54°28'49" E 232.41'
ZONING LINE
LIMITED INDUSTRIAL DISTRICT
RESIDENCE A DISTRICT
(10-6) PROP CB-5 R=89.70 I=86.00
(10-6) PROP CB-6 R=89.15 I=85.45
(10-2) PROP DMH-4 R=88.90 I(IN)=85.50 I(OUT)=85.50
(10-6) PROP CB-7 R=88.85 I=85.65
(14-2) (14-5) PROP HAYBALE/ SILTATION FENCE AT LIMIT OF WORK (TYP)
(10-6) PROP CB-8 W/ DOUBLE GRATE R=88.70 I=85.50
TOW=90.66 BOW=86.33
TOW=90.2 BOW=87.5
TOW=89.8 BOW=87.0
(12-4) PROP 12' WIDE SPILLWAY ELEV.=86.10
PROP 33 LF (2) 30" RCP CULVERTS I=84.00
TOW=91.2 BOW=84.0
(12-3) PROP 18"RCP OUTLET W/SEDIMENT TRAP I=84.92
(10-2) PROP DMH-5 R=88.90 I(IN)=85.25(dmh-4) I(IN)=85.30(cb-8) I(IN)=85.25(cb-6) I(OUT)=85.00
(15-1) PROP SEDIMENT TRAP FOREBAY BOTTOM ELEV.=83.5 BERM ELEV.=84.5
TOW=89.9 BOW=84.0
BENCHMARK STAKE&TACK ELEV.=88.90 (NAVD DATUM)
(15-1) PROP DETENTION/ INFILTRATION BASIN #3 BOTTOM ELEV.=84.0 BERM ELEV.=87.50 100-YR FLOOD ELEV.= 86.37
+92.00 HP
TOW=92.5 BOW=87.0
(16-1) PROPOSED 20' SPAN BOTTOMLESS PRECAST CONC. BOX CULVERT W/ REINF. CONC. RET. WALLS (MAN. BY CONSPAN BRIDGE SYSTEMS) "TURTLE TUNNEL"
CONTINUE PROP 26' WIDE ROADWAY, 4' WIDE BIT. CONC. SIDEWALK AND CEMENT CONC. RETAINING WALL REFER TO VILLAGE COMMONS PRDS FILING
TP 12/14-3
TP 12/14-4
TP 12/14-5
MW 10
MW 11
MW #8
GRAPHIC SCALE
0' 30' 60' 90'
(IN FEET)
1 inch = 30 ft.

BRADLEY C. McKENZIE CIVIL No. 36917 REGISTERED PROFESSIONAL ENGINEER — COMMONWEALTH OF MASSACHUSETTS

REVISION	DATE	DESCRIPTION	BY	APPR
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VILLAGE SQUARE
644 WASHINGTON STREET
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HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

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SCALE: 1"=30'	DWG FILE NAME: 21-147KrampConceptual
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

PREPARED BY:

McKENZIE ENGINEERING GROUP, INC.

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DRAWING TITLE: **GRADING AND UTILITY PLAN**

DWG. NO. 8

LAYOUT-LANDSCAPE PLAN
VILLAGE SQUARE

WASHINGTON STREET
HANOVER, MA

1"=30'-0"

PLANTING SCHEDULE *

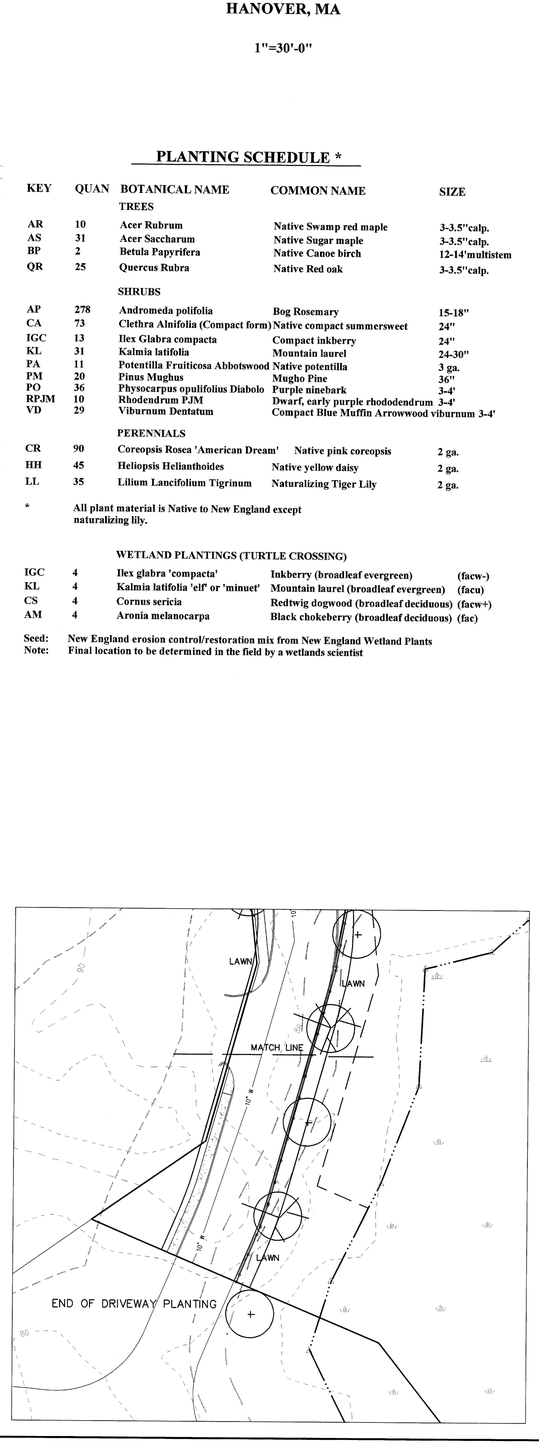
KEY	QUAN	BOTANICAL NAME	COMMON NAME	SIZE
		TREES		
AR	10	Acer Rubrum	Native Swamp red maple	3-3.5"calp.
AS	31	Acer Saccharum	Native Sugar maple	3-3.5"calp.
BP	2	Betula Papyrifera	Native Canoe birch	12-14'multistem
QR	25	Quercus Rubra	Native Red oak	3-3.5"calp.
		SHRUBS		
AP	278	Andromeda polifolia	Bog Rosemary	15-18"
CA	73	Clethra Alnifolia (Compact form)	Native compact summersweet	24"
IGC	13	Ilex Glabra compacta	Compact inkberry	24"
KL	31	Kalmia latifolia	Mountain laurel	24-30"
PA	11	Potentilla Fruiticosa Abbotswood	Native potentilla	3 ga.
PM	20	Pinus Mughus	Mugho Pine	36"
PO	36	Physocarpus opulifolius Diabolo	Purple ninebark	3-4'
RPJM	10	Rhodendrum PJM	Dwarf, early purple rhododendrum	3-4'
VD	29	Viburnum Dentatum	Compact Blue Muffin Arrowwood	viburnum 3-4'
		PERENNIALS		
CR	90	Coreopsis Rosea 'American Dream'	Native pink coreopsis	2 ga.
HH	45	Heliopsis Helianthoides	Native yellow daisy	2 ga.
LL	35	Lilium Lancifolium Tigrinum	Naturalizing Tiger Lily	2 ga.

* All plant material is Native to New England except naturalizing lily.

WETLAND PLANTINGS (TURTLE CROSSING)

IGC	4	Ilex glabra 'compacta'	Inkberry (broadleaf evergreen) (facw-)
KL	4	Kalmia latifolia 'elf' or 'minuet'	Mountain laurel (broadleaf evergreen) (facu)
CS	4	Cornus sericia	Redtwig dogwood (broadleaf deciduous) (facw+)
AM	4	Aronia melanocarpa	Black chokeberry (broadleaf deciduous) (fac)

Seed: New England erosion control/restoration mix from New England Wetland Plants
Note: Final location to be determined in the field by a wetlands scientist



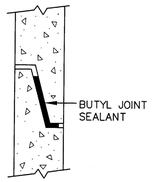
DATE: 8/22/05
REVISIONS: 12/21/05
SCALE: 1"=30'-0"

C.L. THOMPSON ASSOCIATES
2103 WASHINGTON STREET-SUITE 3
HANOVER, MA 02339
TEL(781)982-8006 FAX(781)982-8016 EMAIL-CLTASSOC@AOL.COM

LAYOUT-LANDSCAPE PLAN
VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MA
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

L-1

PROJECT NO. 0993

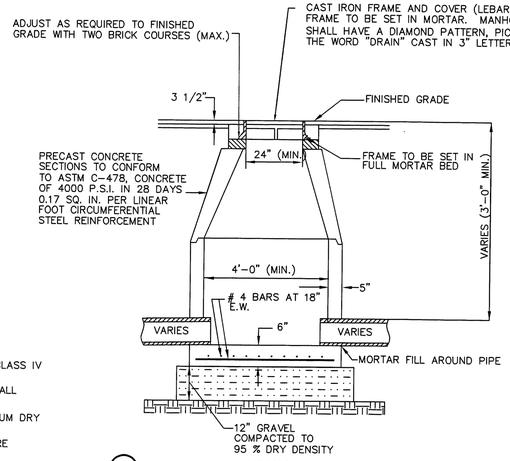


PREFORMED FLEXIBLE
JOINT SEALANT

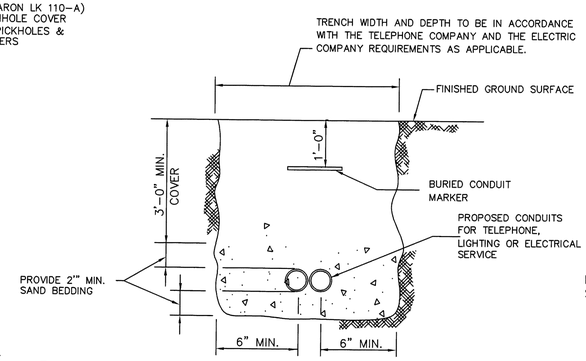
(10-1) MANHOLE JOINT DETAILS
SCALE: N.T.S.

STORM DRAIN NOTES:

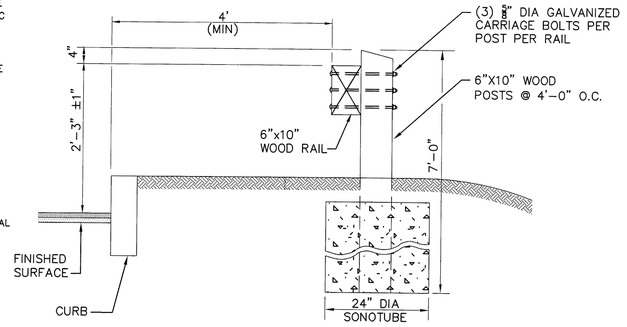
1. REINFORCED CONCRETE DRAIN PIPE SHALL BE CLASS IV UNLESS OTHERWISE NOTED.
2. DRAIN PIPES WITH LESS THAN 3' OF COVER SHALL BE CLASS V RCP. UNLESS OTHERWISE NOTED.
3. BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY BY AASHTO T-180D METHOD.
4. SHEETING, IF USED, SHALL BE CUT OFF NO MORE THAN 12" ABOVE TOP OF PIPE.
5. UNSUITABLE SOIL BELOW THE INVERT SHALL BE REMOVED AND REPLACED WITH APPROVED MATERIAL AND SHALL NOT BE USED AS BACKFILL.



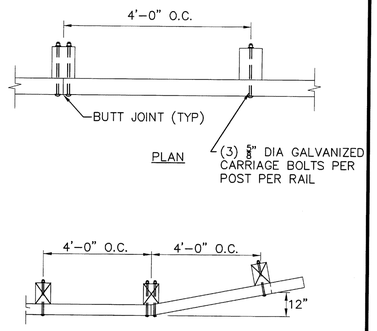
(10-2) STANDARD DRAIN MANHOLE DETAIL
SCALE: N.T.S.



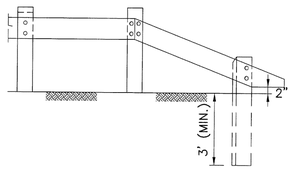
(10-3) TYPICAL ELECTRIC/TELEPHONE/CABLE CONDUIT (US)
SCALE: N.T.S.



SECTION AT GRADE

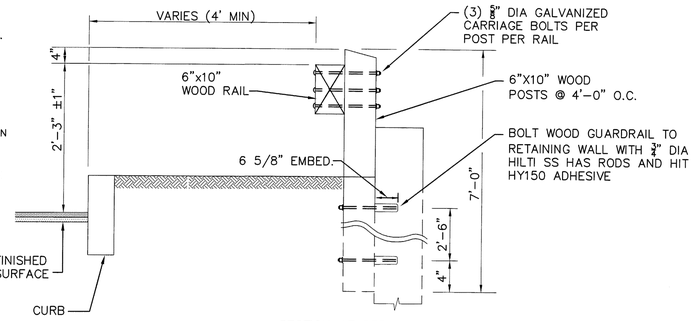


PLAN OF TRANSITION END



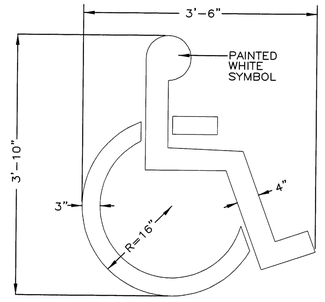
ELEVATION

ALL RAIL AND POST SECTIONS TO BE PRESSURE TREATED #1 SOUTHERN YELLOW PINE OR EQUAL

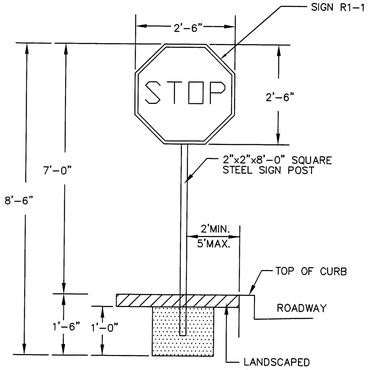


SECTION AT RETAINING WALL

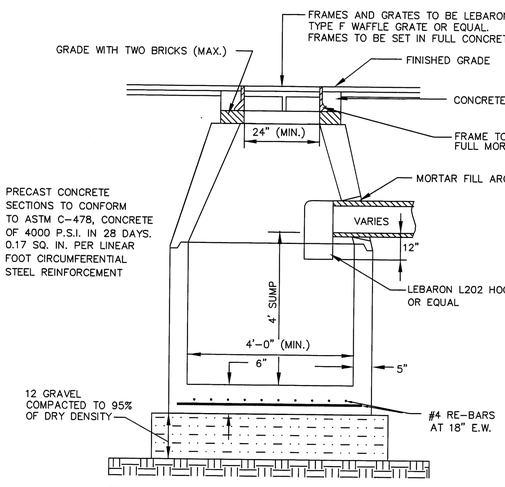
(10-8) WOOD GUARDRAIL
NOT TO SCALE



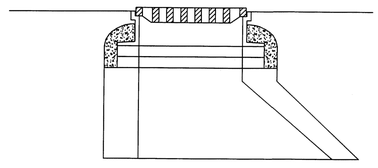
(10-4) PAINTED HANDICAP SYMBOL DETAIL
SCALE: N.T.S.



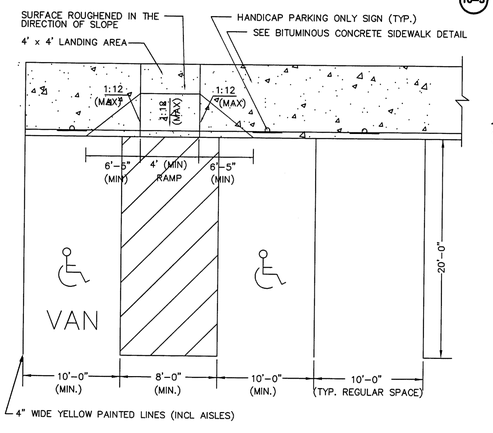
(10-5) TYPICAL SIGN DETAIL
SCALE: N.T.S.



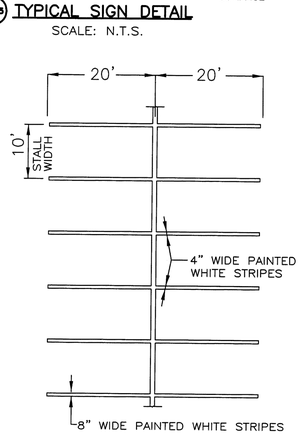
(10-6) STANDARD CATCH BASIN DETAIL
SCALE: N.T.S.



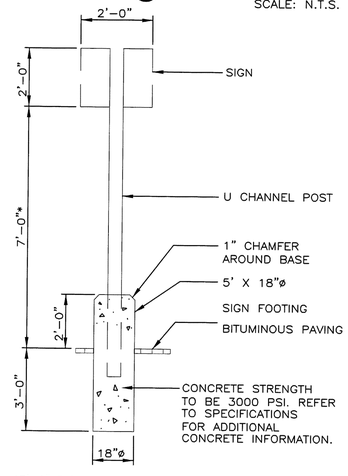
(10-7) STANDARD CATCH BASIN ALTERNATE ECCENTRIC CONE SECTION
SCALE: N.T.S.



(10-9) HANDICAP PARKING STALL AND RAMP DETAIL
SCALE: N.T.S.



(10-10) TYPICAL STRIPING DETAIL
SCALE: N.T.S.



*7'-0" TYPICAL. REFER TO TRAFFIC CONTROL SCHEDULE FOR EXACT MOUNTING HEIGHT

(10-11) TYPICAL CHANNEL MOUNTING DETAIL FOR HANDICAP SIGNS
SCALE: N.T.S.

GENERAL UTILITY NOTES

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIGSAFE" (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES AND THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLAN.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCHMARKS NECESSARY FOR THE WORK.
3. THE CONTRACTOR SHALL EXCAVATE THE TEST PITS IN THE LOCATIONS SHOWN ON THE PLAN PRIOR TO COMMENCING WORK TO VERIFY THE ELEVATIONS AND LOCATIONS OF EXISTING UTILITIES. THE CONTRACTOR SHALL PROVIDE THE OWNER AND ENGINEER WITH THE RESULTS PRIOR TO COMMENCING ANY WORK.
4. ALL WATER SERVICES SHALL BE INSTALLED WITH 5' OF COVER EXCEPT AS NOTED OR DETAILED OTHERWISE.
5. DOMESTIC WATER SERVICES 2 INCHES AND SMALLER SHALL BE TYPE K COPPER TUBING AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED CORPORATION STOP WITH APPROVED SADDLE, CURB STOP, GATE AND BOX.
6. SEE SHEET CONSTRUCTION DETAILS SHEET 10 FOR HANOVER WATER DEPT. CONSTRUCTION DETAILS, NOTES, AND SPECIFICATIONS.

COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
CIVIL
No. 38917
REGISTERED PROFESSIONAL ENGINEER

REVISION	DATE	DESCRIPTION	BY	APPR
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APPLICANT:

WITSOP-1, LLC
150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

PROJECT NO.: 21-147	DATE: MARCH 31, 2005
SCALE: AS NOTED	DWG FILE NAME: 21-147KrampConceptual
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

PREPARED BY:

McKENZIE ENGINEERING GROUP, INC.
PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT
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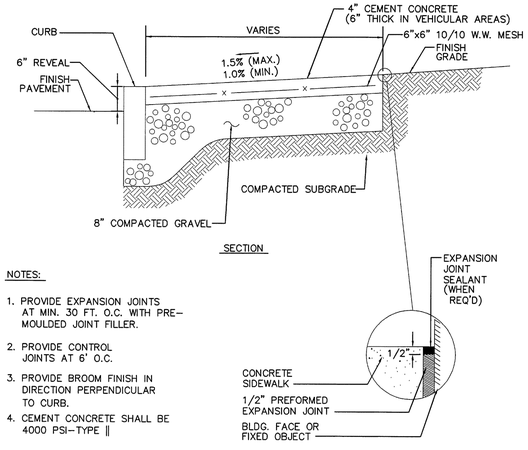
DRAWING TITLE:

CONSTRUCTION DETAILS I

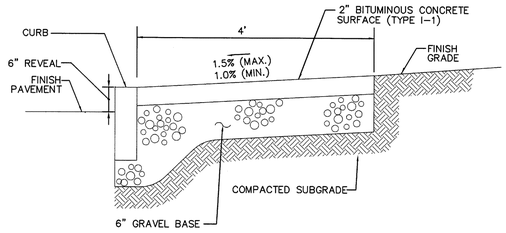
DWG. NO. **10**



NOTES:

1. PROVIDE EXPANSION JOINTS AT MIN. 30 FT. O.C. WITH PRE-MOULDED JOINT FILLER.
2. PROVIDE CONTROL JOINTS AT 6' O.C.
3. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.
4. CEMENT CONCRETE SHALL BE 4000 PSI-TYPE II

(11-1) CEMENT CONCRETE WALK DETAIL
SCALE: N.T.S.



(11-2) BITUMINOUS CONCRETE WALK DETAIL
SCALE: N.T.S.

D-1 APPROX. GRADE EL. 92.5±

Ap HORIZON SANDY LOAM 10YR 2/2	8"
B HORIZON SANDY LOAM 10YR 4/6	30"
C1 HORIZON SANDY LOAM 2.5Y 5/4	60"
C2 HORIZON SAND 2.5Y 5/4	216"

GROUNDWATER OBSERVED: 198"
MOTTLING OBSERVED: 180"
E.S.H.G.W. = 180"
PERC. RATE: 3 MPI @ 74" DEPTH

D-2 APPROX. GRADE EL. 93.5±

Ap HORIZON SANDY LOAM 10YR 3/2	14"
B HORIZON SANDY LOAM 10YR 4/6	31"
C1 HORIZON SANDY LOAM 2.5Y 5/3	56"
C1d HORIZON SANDY LOAM 2.5Y 5/3	88"
C2 HORIZON SAND 2.5Y 6/2	174"

GROUNDWATER OBSERVED: NONE ENCOUNTERED
MOTTLING OBSERVED: NONE ENCOUNTERED
E.S.H.G.W. = >174"
PERC. RATE: 2 MPI @ 92" DEPTH

D-3 APPROX. GRADE EL. 91.0±

F HORIZON FILL	36"
C1 HORIZON SAND 2.5Y 4/3	96"
C2 HORIZON SANDY LOAM 2.5Y 5/6	108"
C3 HORIZON SAND 2.5Y 4/4	156"

GROUNDWATER OBSERVED: 156"
MOTTLING OBSERVED: NONE ENCOUNTERED
E.S.H.G.W. = 132" (FRIMPTER)
PERC. RATE: <2 MPI @ 42" DEPTH

D-4 APPROX. GRADE EL. 89.0±

PAVEMENT	2"
F HORIZON FILL	72"
C1 HORIZON SAND 2.5Y 4/3	126"
C1d HORIZON SILT LOAM 2.5Y 5/4	160"
C2 HORIZON SAND 2.5Y 5/2	170"

GROUNDWATER OBSERVED: 164"
MOTTLING OBSERVED: 126"
E.S.H.G.W. = 126"
PERC. RATE: NONE

D-5 APPROX. GRADE EL. 87.0±

O/A HORIZON SANDY LOAM 10YR 3/3	12"
B HORIZON LOAMY SAND 7.5YR 4/4	24"
C1 HORIZON SAND 2.5Y 4/3	110"

GROUNDWATER OBSERVED: 86"
MOTTLING OBSERVED: NONE ENCOUNTERED
E.S.H.G.W. = 62" (FRIMPTER)
PERC. RATE: 3 MPI @ 31" DEPTH

D-6 APPROX. GRADE EL. 87.8±

O/A HORIZON SANDY LOAM 10YR 3/2	9"
B HORIZON LOAMY SAND 10YR 4/6	23"
C1 HORIZON SAND 2.5Y 4/3	120"

GROUNDWATER OBSERVED: 105"
MOTTLING OBSERVED: 80"
E.S.H.G.W. = 80"
PERC. RATE: <2 MPI @ 41" DEPTH

D-7 APPROX. GRADE EL. 88.0±

O/A HORIZON SANDY LOAM 10YR 3/3	9"
B HORIZON SANDY LOAM 10YR 4/6	28"
C1 HORIZON SAND 2.5Y 4/3	108"

GROUNDWATER OBSERVED: 100"
MOTTLING OBSERVED: 77"
E.S.H.G.W. = 77"
PERC. RATE: < 2MPI @ 42" DEPTH

DB2 APPROX. GRADE EL. 88.0±

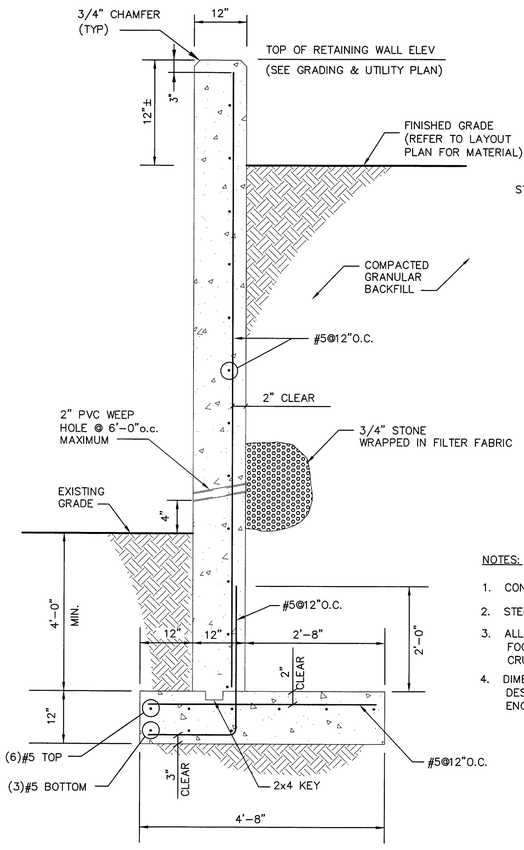
F HORIZON FILL	31"
A HORIZON SANDY LOAM 10YR 2/2	36"
B HORIZON SANDY LOAM 10YR 4/6	53"
C1 HORIZON LOAMY SAND 2.5Y 4/4	84"
C2 HORIZON SAND 2.5Y 4/4	113"
C3 HORIZON SANDY LOAM 2.5Y 4/3	144"

GROUNDWATER OBSERVED: 84"
MOTTLING OBSERVED: NONE ENCOUNTERED
E.S.H.G.W. = 84"
PERC. RATE: 6 MPI @ 50" DEPTH

DB3 APPROX. GRADE EL. 87.5±

F HORIZON FILL	31"
A HORIZON SANDY LOAM 10YR 2/2	37"
B HORIZON SANDY LOAM 10YR 4/6	57"
C1 HORIZON SAND 2.5Y 4/4	110"
C2 HORIZON SANDY LOAM 2.5Y 4/3	120"

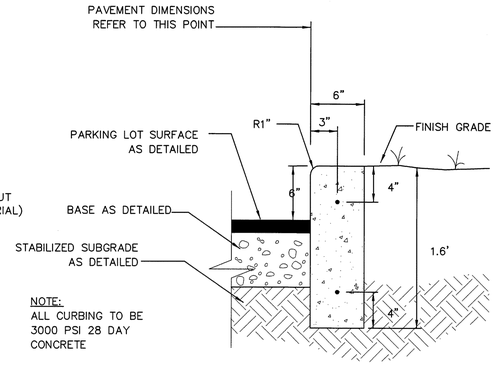
GROUNDWATER OBSERVED: 75"
MOTTLING OBSERVED: 70"
E.S.H.G.W. = 70"
PERC. RATE: NONE



NOTES:

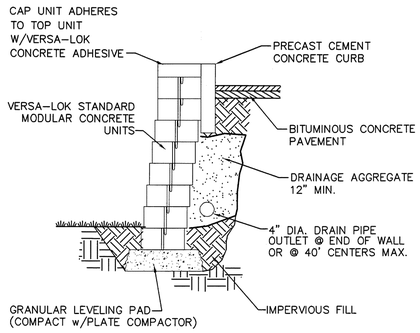
1. CONCRETE - 3000 PSI, 3/4" AGGREGATE
2. STEEL REINFORCEMENT TO BE 60,000 PSI.
3. ALL UNSUITABLE MATERIAL UNDER PROPOSED FOOTING TO BE REMOVED AND REPLACE WITH CRUSHED STONE.
4. DIMENSIONS OF WALL AND REINFORCING TO BE DESIGNED BY A REGISTERED PROFESSIONAL STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION.

(11-3) CONCRETE RETAINING WALL
SCALE: N.T.S.

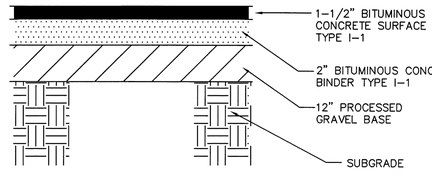


NOTE:
ALL CURBING TO BE 3000 PSI 28 DAY CONCRETE

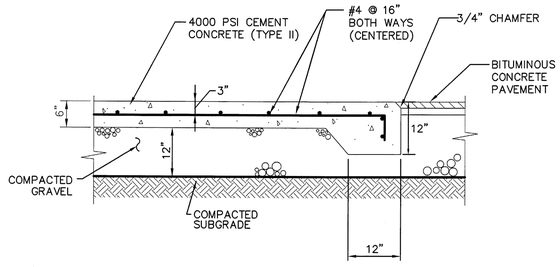
(11-4) PRECAST CEMENT CONCRETE CURB DETAIL
SCALE: N.T.S.



(11-5) VERSA-LOK RETAINING WALL
SCALE: N.T.S.



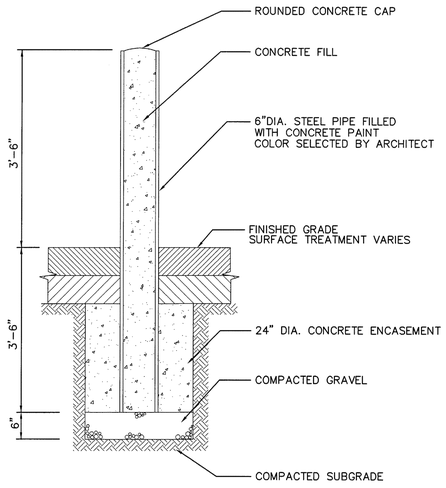
(11-6) BITUMINOUS CONCRETE PAVEMENT DETAIL FOR PARKING AREAS
SCALE: N.T.S.



NOTES:

1. SIZE OF COMPACTOR PAD TO BE AS INDICATED ON PLANS. CONSTRUCTION JOINTS TO BE SET AT INTERVALS OF 1/3 OF LENGTH.
2. SQUARE DUMPSTER PAD TO BE 16'x16' (MAX).

(11-7) DUMPSTER PAD DETAIL
SCALE: N.T.S.



(11-8) TYPICAL BOLLARD DETAIL
SCALE: N.T.S.

COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
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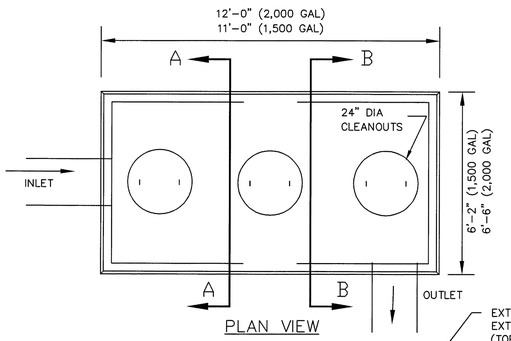
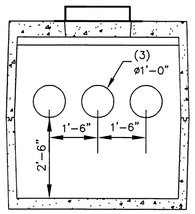
DRAWING TITLE:

CONSTRUCTION DETAILS II

DWG. NO. **11**

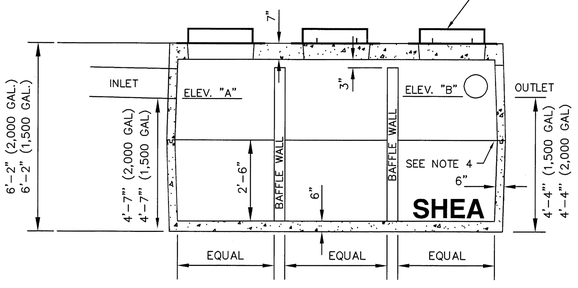


PLAN VIEW

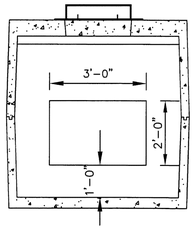


SECTION A–A VIEW

EXTEND TO FINISHED GRADE W/PRECAST CONC. EXTENSION RINGS, BRICK/MORTAR AND CAST IRON FRAME AND COVER (TOP BRICK/MORTAR LAYER MAX. DEPTH OF 12", EXTENSION RINGS TO BE MAN. BY SHEA CONC., ITEM TK–WT30X36H, OR EQUIV.)



SECTION SIDE VIEW



SECTION B–B VIEW

NOTES:

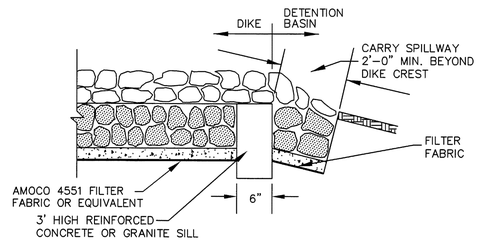
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. ALL REINFORCEMENT PER ASTM C1227–93.
3. DESIGNED FOR H–20 LOADING.
4. TONGUE AND GROOVE JOINT SEALED WITH BUTYL RESIN.

(12-1) PRECAST PARTICLE SEPARATOR DETAIL

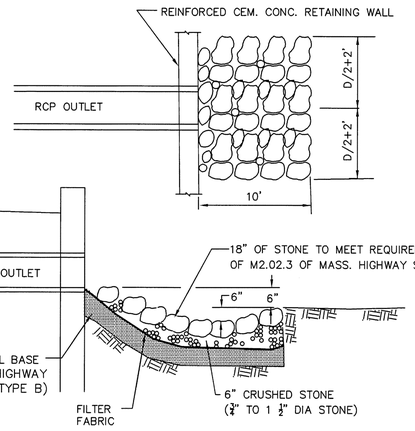
SCALE: N.T.S.

SCHEDULE OF ELEVATIONS

	SIZE	ELEV. A	ELEV. B
PS–1	1,500 GAL	86.12	85.87
PS–2	2,000 GAL	86.50	85.25

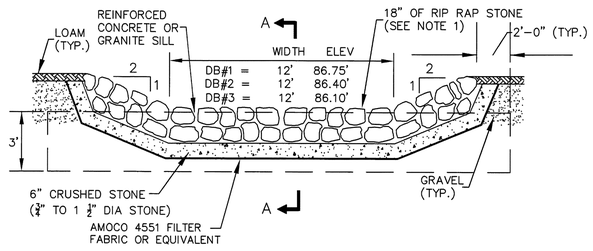


SECTION A–A



(12-3) TYPICAL SEDIMENT TRAP DETAIL

SCALE: N.T.S.



"LOOKING UPSTREAM"

NOTE:

1. RIP RAP TO BE HAND CHINKED WITH A SMOOTH SURFACE ALONG THE TOP OF THE DIKE AND A ROUGH SURFACE ALONG THE DOWNSTREAM FACE AND TOE OF THE DIKE. STONE TO MEET M2.02.3 REQUIREMENTS.

(12-4) SPILLWAY DETAIL

SCALE: N.T.S.

SEEDING RATES

	POUND / ACRE	POUNDS / 1,000 S.F.
A. tall fescue	20	0.45
creeping red fescue	20	0.45
redtop	2	0.05
total	42	0.95
B. tall fescue	15	0.35
creeping red fescue	10	0.25
birdsfoot trefoil	15	0.35
total	40	0.95
C. tall fescue	20	0.45
creeping red fescue	20	0.45
birdsfoot trefoil	8	0.20
total	48	1.10
D. birdsfoot trefoil	10	0.25
redtop	5	0.10
reed canstygrass	15	0.35
total	30	0.70
E. tall fescue	20	0.45
flatpea	30	0.75
total	50	1.20
F. creeping red fescue 1/	50	1.15
kentucky bluegrass 1/	50	1.15
total	100	2.30
G. tall fescue 1/	150	3.60

TEMPORARY SEEDING RATES

H. winter rye	112	2.50 (Best for fall seeding, Aug 15 to Sept. 5)
oats	80	2.00 (Best for spring seeding, before May 15)
annual ryegrass	40	1.00 (Best for fall seeding, Aug 15 to Sept. 15) (may be used early spring also)

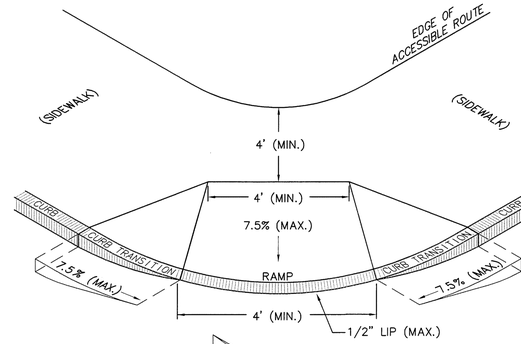
SEEDING GUIDE

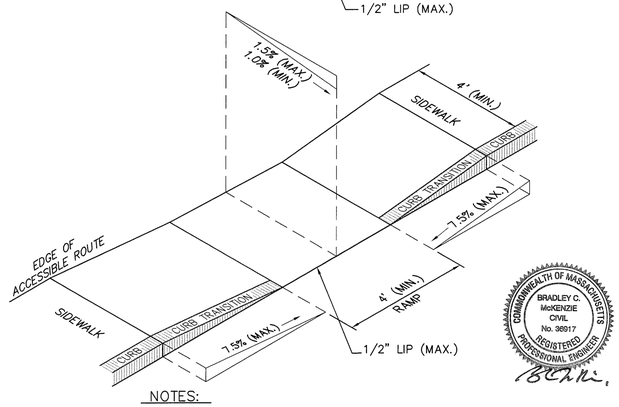
USE	Seeding mixture 1/
steep cuts and fills, borrow and disposal areas	E
waterways, emergency spillways, and other channels with flowing water	D

NOTES:

1. TOP OF LOAM (TOPSOIL) IS FINISHED GRADE.
2. TOPSOIL SHALL CONTAIN BETWEEN 5% AND 12% ORGANIC MATTER AND SHALL HAVE A MAXIMUM STONE SIZE OF 1 1/4" AND SHALL CONFORM TO THE FOLLOWING GRADATION:

SIEVE	% PASSING
1 1/4 INCH	100
No.4	85–100
No.40	60–85
No.100	38–60
No.200	28–40





NOTES:

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5% (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.)
5. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
6. DIMENSIONS SUBJECT TO CHANGE IN THE FIELD IF EXISTING CONDITIONS WILL MAKE THE RAMP IMPRACTICAL, UNSAFE OR ILLEGAL.
7. BROOM FINISH SURFACE AT RIGHT ANGLES TO DIRECTION OF TRAVEL.

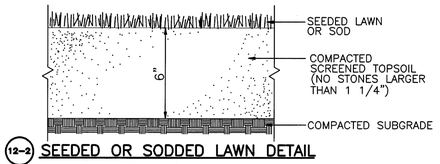
(12-5) CEMENT CONCRETE SIDEWALK RAMP

SCALE: N.T.S.

SEEDING SPECIFICATIONS

Seeding Recommendations

1. Seedbed Preparation
   a. Surface and seepage water should be drained or diverted from the site to prevent drowning or winter killing of the plants.
   b. Stones larger than four inches and trash should be removed because they intefere with seeding and future maintenance of the area. Where feasible, the soil should be tilled to a depth of about four inches to prepare a seedbed and mix fertilizer and lime into the soil. The seedbed should be left in a reasonably firm and smooth condition. The last tillage operation should be performed across the slope wherever practical.
2. Establishing a Stand
   a. Lime and fertilizer should be applied prior to or at the time of seeding and incorporated into the soil. Kinds and amounts of lime and fertilizer should be based on evaluation of soil tests. When a soil test is not available, the following minimum amounts should be applied:
      Agricultural limestone: 2 tons per acre or 100 lbs. per sq. ft.
      Nitrogen (N): 50 lbs. per acre or 1.1 lbs. per 1000 sq. ft.
      Phosphate (P_2O_5): 100 lbs. per acre or 2.2 lbs. per 1000 sq. ft.
      Potash (K_2O): 100 lbs. per acre or 2.2 lbs. per 1000 sq. ft.
      (Note: This is the equivalent of 500 lbs. per acre of 10–20–20 fertilizer or 1,000 lbs. per acre of 5–10–10)
   b. Seed should be spread uniformly by the method most appropriate for the site. Methods include broadcasting, drilling, and hydroseeding. Where broadcasting is used, cover seed with 0.25 inch of soil or less, by cultipacking or raking.
   c. Refer to Seeding Rates and Seeding Guides for appropriate seed mixtures and rates of seeding.
   d. When seeded areas are mulched, plantings may be made from early spring to early October. When seeded areas are not mulched, plantings should be made from early spring to May 20 or from August 10 to September 1.
3. Mulch
   a. Hay, straw, or other mulch, when needed, should be applied immediately after seeding.
   b. Mulch will be held in place using techniques as specified in the "Best Management Practices Operation and Maintenance Plan"
4. Maintenance to Establish a Stand
   a. Planted areas should be protected from damage by fire, grazing, traffic, and dense weed growth.
   b. Fertilization needs should be determined by onsite inspections. Supplemental fertilizer is usually the key to fully complete the establishment of the stand because most perennials take 2 to 3 years to become established.
   c. In waterways, channels, or swales where uniform flow conditions are anticipated, occasional mowing may be necessary to control growth of woody vegetation.



(12-2) SEEDED OR SODDED LAWN DETAIL

SCALE: N.T.S.

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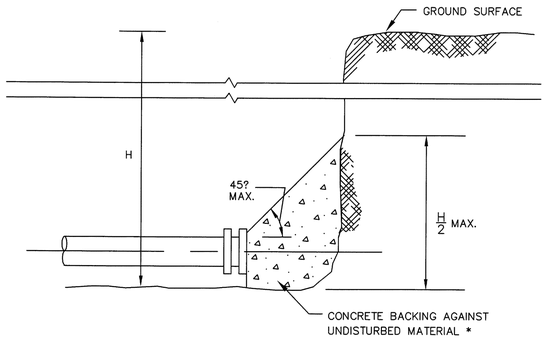
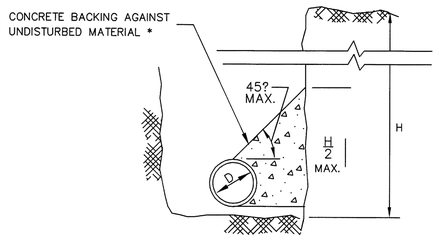
McKENZIE ENGINEERING GROUP, INC.

PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT
325 CENTRAL STREET — SAUGUS, MASSACHUSETTS 01906
PHONE: (781) 941–2211 — FACSIMILE: (781) 941–2662
150 LONGWATER DRIVE, SUITE 101 — NORWELL, MASSACHUSETTS 02061
PHONE: (781) 792–3900 — FACSIMILE: (781) 792–0333

DRAWING TITLE:	DWG. NO.
CONSTRUCTION DETAILS III	12



13-1 TYPICAL WATER MAIN PLUG
NOT TO SCALE



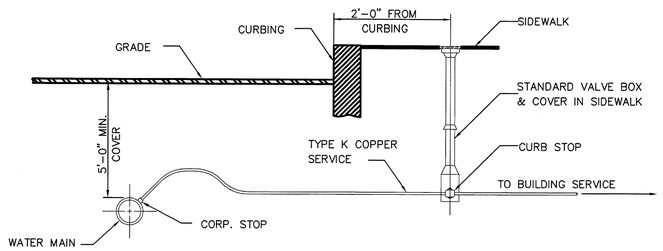
13-4 TYPICAL WATER MAIN THRUST BLOCK SECTION DETAILS
NOT TO SCALE

MAXIMUM SIZE TAPPED CONNECTION *

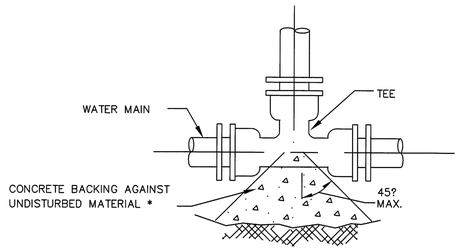
WATER MAIN DIAMETER	MAXIMUM TAP DIAMETER
4"	1/2"
6"	3/4"
8"	3/4"
12"	1"

* WHERE THE SIZE OF THE CONNECTION EXCEEDS THAT GIVEN IN THE TABLE A BOSS SHALL BE PROVIDED OR THE TAP SHALL BE MADE BY MEANS OF MUTIPLE CORP. STOPS AND BRANCH FITTINGS, TAPPED TEE, OR TAPPED SADDLE.

NOTE:
WHERE NO PAVED SIDEWALK EXIST CURB STOPS & VALVE BOXES TO BE INSTALLED IN STREET

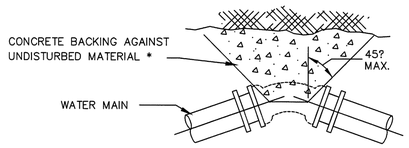


13-6 COPPER SERVICE CONNECTION
N.T.S.



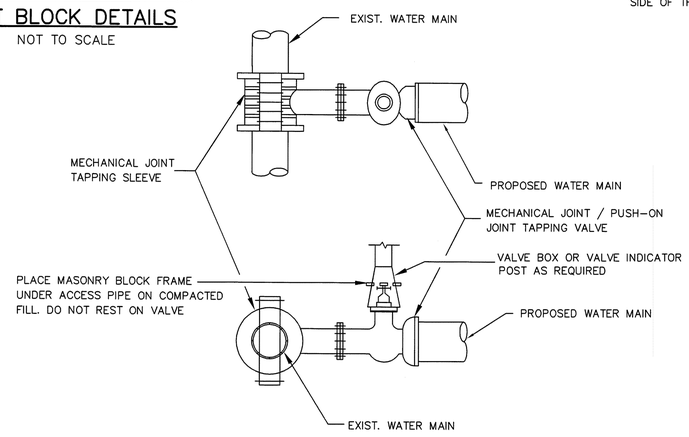
* SEE TABLE ON THRUST BLOCK BEARING AREAS FOR THE AREA OF CONCRETE REQUIRED.

13-2 TYPICAL WATER MAIN TEE THRUST BLOCK DETAILS
NOT TO SCALE



* SEE TABLE ON THRUST BLOCK BEARING AREAS FOR THE AREA OF CONCRETE REQUIRED.

13-5 TYPICAL WATER MAIN BEND THRUST BLOCK DETAILS
NOT TO SCALE



13-7 TYPICAL TAPPING SLEEVE AND VALVE
NOT TO SCALE

THRUST BLOCK BEARING AREAS FOR WATER PIPE

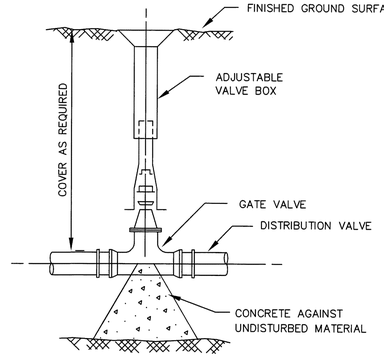
TABLE OF BEARING AREAS IN SQ. FT. AGAINST UNDISTURBED MATERIAL FOR WATER MAIN FITTINGS*

SIZE OF MAIN (IN.)	90° BEND	TEES AND PLUGS	45° BEND
6	4	2.5	2
8	6	4	3
12	12	9	7
16	21	16	12

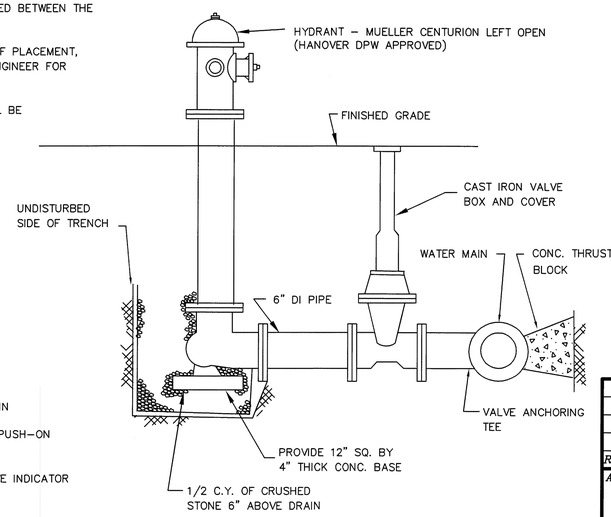
* TYPE OF SOIL IS MEDIUM CLAYEY, 6 OR MORE BLOWS PER FOOT, OR LOOSE GRANULAR, 9 OR MORE BLOWS PER FOOT. SOIL CONDITIONS OTHER THAN THOSE GIVEN WILL REQUIRE LARGER BEARING AREAS.

NOTES:

1. FOR FITTINGS WITH LESS THAN 45 DEFLECTION, USE BEARING AREAS FOR 45 BEND.
2. BEARING AREAS BASED ON HORIZONTAL PASSIVE SOIL PRESSURE OF 2000 P.S.F. AND INTERNAL WATER PRESSURE OF 150 P.S.I.G. JOINTS SHALL NOT BE ENCASED IN CONCRETE. BEARING AREAS MAY BE DIREGARDED FOR TRENCHES IN ROCK WHERE THE TOP OF THE ROCK FACE IS AT OR ABOVE THE CROWN OF THE PIPE. HOWEVER, CONCRETE BACKING SHALL BE PLACED BETWEEN THE PIPE AND THE ROCK FACE.
3. THE CONTRACTOR SHALL SUBMIT 2 WEEKS IN ADVANCE OF PLACEMENT, WORKING DRAWINGS FOR EACH THRUST BLOCK TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
4. ALL TEES, GATE VALVES, HYDRANTS AND FITTINGS SHALL BE MECHANICAL JOINTS WITH MEGA-LUGS.
5. THRUST BLOCKS SHALL BE BARREL BLOCKS.



13-3 WATER GATE DETAIL
NOT TO SCALE



13-8 HYDRANT DETAIL
NOT TO SCALE

GENERAL NOTES

1. IF SHEETING IS USED, IT SHALL BE CUT OFF NO MORE THAN 12" ABOVE TOP OF PIPE.
2. ALL PIPES SHALL BE PRESSURE TESTED AT 200 PSI WORKING PRESSURE FOR A MINIMUM DURATION OF TWO HOUR.
3. WATER SYSTEM IS TO BE DISINFECTED TO 50 P.P.M. AVAILABLE CHLORINE AND AFTER 24 HOURS TO 25 P.P.M. OR AS REQUIRED BY HANOVER WATER SUPERINTENDENT/ENGINEER.
4. WATER PIPE IS TO BE CEMENT LINED DUCTILE IRON "TYTON" OR EQUAL TYPE JOINT, CONFORMING TO A.N.S.I./A.W.W.A. C150/A21.50, CLASS 52, AS APPROVED BY THE HANOVER WATER SUPERINTENDENT/ENGINEER.
5. ALL PIPING SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH A.W.W.A. STANDARDS PRIOR TO PAVING IF PAVING ABOVE TRENCH IS REQUIRED.
6. BACKFILL IS TO BE COMPACTED TO 90% MAXIMUM DRY DENSITY BY AASHTO T-180 D.
7. ALL WATER PIPE SHALL BE LAID WITH A MINIMUM OF 5 FEET OF COVER OF APPROVED MATERIALS.
8. ALL HYDRANT LOCATIONS ARE TO BE APPROVED BY FIRE DEPARTMENT.
9. RESULTS FROM PRESSURE TESTING AND DISINFECTION SHALL BE FURNISHED TO THE DIRECTOR OF PUBLIC WORKS FOR APPROVAL PRIOR TO WATER BEING TURNED ON.
10. ALL WORK SHALL BE IN CONFORMANCE WITH HANOVER WATER DEPARTMENT STANDARDS.
11. ALL PERMITS REQUIRED FOR STREET OPENINGS AND WATER MAIN TAPPING MUST BE OBTAINED.
12. NO WATER WILL BE TURNED ON IN THE PROJECT WITHOUT WATER DEPARTMENT APPROVAL.

COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
CIVIL
No. 36917
REGISTERED PROFESSIONAL ENGINEER

REVISION	DATE	DESCRIPTION	BY	APPR
4	12/21/05	REVISIONS PER PLANNING BOARD CONDITIONS	NAC	BCM
3	9/12/05	REVISED COVER DEPTH ON SERVICE DETAIL	DWK	BCM
2	8/19/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM
1	7/22/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM

APPLICANT:

WITSOP-1, LLC
150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

PROJECT NO.: 21-147	DATE: MARCH 31, 2005
SCALE: AS NOTED	DWG FILE NAME: 21-147KrampConceptual
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

PREPARED BY:

McKENZIE ENGINEERING GROUP, INC.
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150 LONGWATER DRIVE, SUITE 101 NORWELL, MASSACHUSETTS 02061
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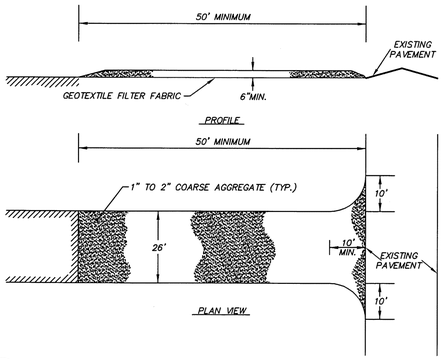
DRAWING TITLE:

CONSTRUCTION DETAILS IV

DWG. NO.
13

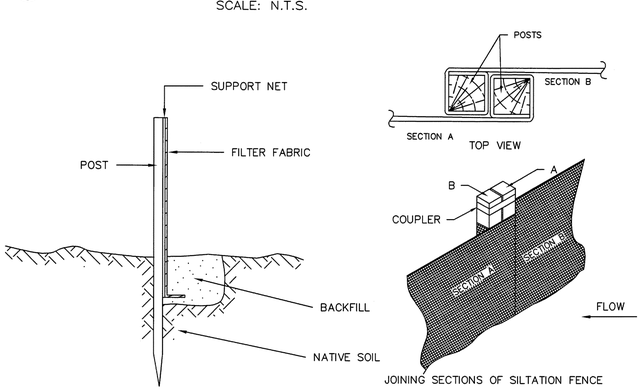


(14-1) STABILIZED CONSTRUCTION ENTRANCE DETAIL

SCALE: N.T.S.

CONSTRUCTION SPECIFICATIONS:

1. STONE FOR A STABILIZATION CONSTRUCTION ENTRANCE SHALL BE 1 TO 2 INCH STONE, RECLAIMED STONE.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL BE 50 FEET.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE.
5. ALL SURFACE WATER THAT IS FLOWING TO OR DEVERTED TOWARDS THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
6. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED PROMPTLY.

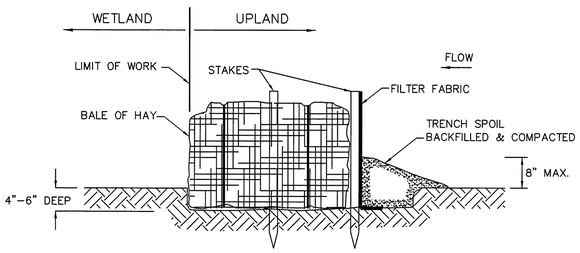


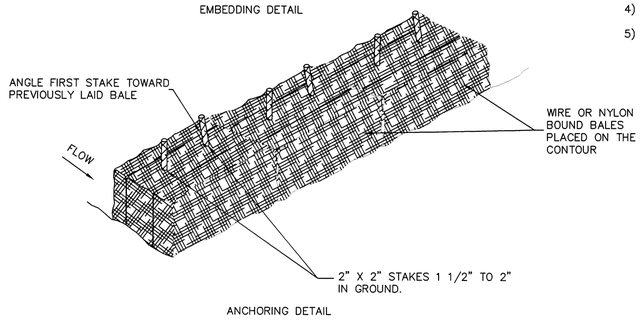
CONSTRUCTION NOTES:

1) WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2) FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3) WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES AND FOLDED.
4) MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

(14-2) SILTATION FENCE

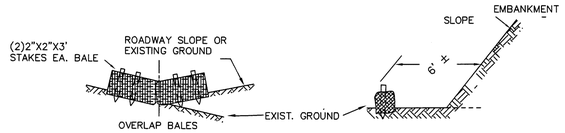
SCALE: N.T.S.

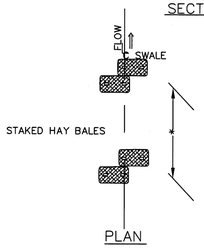




(14-5) STAKED HAYBALE AND SILTATION FENCE

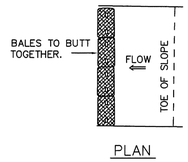
SCALE: N.T.S.



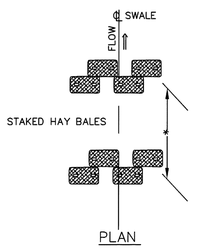


NOTE: TO BE USED IN LOCATIONS WHERE EXIST. GROUND SLOPES IN TOWARD THE TOE OF THE EMBANKMENT. OR IN NARROW DITCHES.

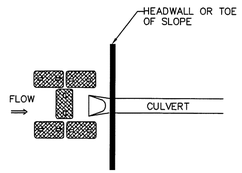
*- VARIES DEPENDING ON HEIGHT OF SLOPE AND STEEPNESS OF RESULTING GRADES AT TOE OF SLOPE EXIST. GROUND INTERSECTION.



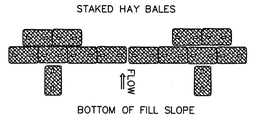
NOTE: TO BE USED WHERE EXIST. GROUND SLOPES AWAY FROM THE TOE OF THE EMBANKMENT.



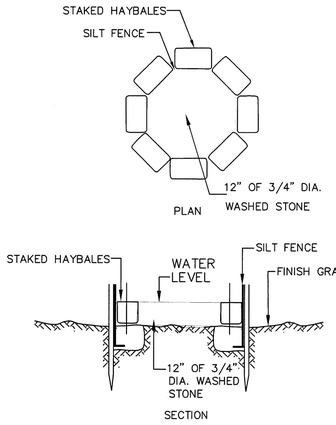
NOTE: TO BE USED IN LOCATIONS WHERE EXIST. GROUND SLOPES IN TOWARD THE TOE OF THE EMBANKMENT. OR IN WIDE DITCHES.



NOTE: TO BE USED AROUND CULVERT INLETS



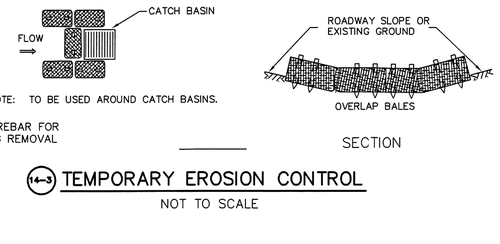
NOTE: TO BE USED AT BOTTOM OF FILL SLOPE WHERE HEAVY FLOW MAY BE ANTICIPATED

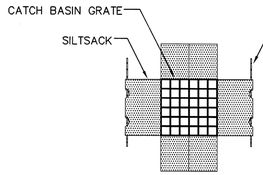


(14-4) DEWATERING FILTER DETAIL

NOT TO SCALE

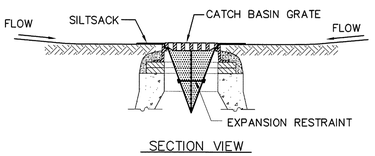
DEWATERING METHODS SHALL BE EMPLOYED IN ANY AREA WHERE PUMPING OF GROUNDWATER IS NECESSARY TO CONSTRUCT THE PROPOSED DRIVEWAY AND UTILITIES. DETAILS SHOWN ON THIS PLAN SHALL BE USED AND ANY MODIFICATION SHALL BE APPROVED BY THE CONSERVATION COMMISSION.





NOTES:

1. INSTALL SILTSACK IN ALL CATCH BASINS WHERE INDICATED ON THE PLAN BEFORE COMMENCING WORK OR IN PAVED AREAS AFTER BINDER COURSE IS PLACED AND HAY BALES HAVE BEEN REMOVED.
2. GRATE TO BE PLACED OVER SILTSACK.
3. SILTSACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED. MAINTAIN UNTIL UPSTREAM AREAS HAVE BEEN PERMANENTLY STABILIZED.



CONSTRUCTION NOTES:

1) BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2) EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM DEPTH OF 4".
3) BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4) INSPECTION SHALL BE FREQUENT, AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS REQUIRED.
5) BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULLNESS, SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

(14-8) SILTSACK SEDIMENT TRAP

NOT TO SCALE

EROSION AND SEDIMENTATION CONTROL

REFER TO CONSTRUCTION PHASE BEST MANAGEMENT PRACTICES AS SPECIFIED IN "BEST MANAGEMENT PRACTICES OPERATION AND MAINTENANCE PLAN" PREPARED BY MCKENZIE ENGINEERING GROUP, DATED MARCH 31, 2005 AS REVISED AND APPROVED FOR STURCTURAL STABILIZATION AND DUST CONTROL EROSION AND SEDIMENTATION CONTROL MEASURES.

STRUCTURAL PRACTICES UTILIZED FOR THE PROJECT WILL INCLUDE SEDIMENT FENCE/HAYBALE BARRIER CONTROLS, STABILIZED CONSTRUCTION ENTRANCE, SEDIMENT BASINS, AND INLET PROTECTION.

STABILIZATION PRACTICES UTILIZED FOR THE PROJECT WILL INCLUDE TEMPORARY SEEDING, GEOTEXTILES (JUTE MESH), MULCHING, AND PERMANENT SEEDING.

IN GENERAL, THE SMALLEST POSSIBLE AREA OF LAND SHOULD BE EXPOSED AT ONE TIME. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHALL BE CONFINED TO A MAXIMUM PERIOD OF 3 MONTHS. LAND SHALL NOT BE EXPOSED DURING THE WINTER MONTHS. ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY AND THAT WILL BE REGRADED AT A LATER DATE SHALL BE MACHINE HAY MULCHED AND SEEDED WITH WINTER RYE TO PREVENT EROSION.

(14-3) TEMPORARY EROSION CONTROL

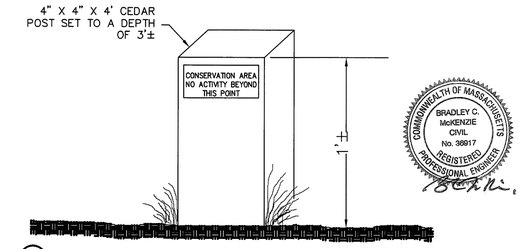
NOT TO SCALE

CONSTRUCTION SEQUENCE

TO PREVENT EXCESSIVE EROSION AND SILTING, THE FOLLOWING CONSTRUCTION SEQUENCE COUPLED WITH OTHER WIDELY ACCEPTED PRINCIPALS FOR REDUCING EROSION AND SEDIMENTATION SHALL BE IMPLEMENTED IN THE DEVELOPMENT OF THE SITE.

1) THE CONTRACTOR SHALL COORDINATE A PRE-CONSTRUCTION MEETING PRIOR TO ANY CONSTRUCTION ACTIVITY.
2) STABILIZATION PRACTICES FOR EROSION AND SEDIMENT CONTROL SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. REFER TO "EROSION AND SEDIMENTATION CONTROL" SECTION OF THIS PLAN.

   PLACE SILTATION FENCE AND HAYBALE BARRIERS AT LOCATIONS INDICATED ON THE CONSTRUCTION DRAWINGS AND CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE AT WASHINGTON STREET.
3) CLEAR AND GRUB ALL AREAS ASSOCIATED WITH THE CONSTRUCTION OF THE SITE AND RELATED INFRASTRUCTURE.
4) EXCAVATE TOPSOIL AND SUBSOIL FROM CUT AND FILL AREAS AND STOCKPILE ON SITE IN LOCATIONS SHOWN ON THE PLAN. CONSIDERATION SHOULD BE GIVEN TO LOCATING STOCKPILES ON THE UPHILL SIDE OF DISTURBED AREAS, WHERE POSSIBLE, TO ACT AS TEMPORARY DIVERSIONS.
5) CONSTRUCT RETAINING WALLS.
6) CONSTRUCT CUT AND FILL AREAS, INSTALLING HAYBALE CHECK DAMS AT TOES OF ALL 3:1 OR GREATER SLOPES, AND AT ENDS OF ALL CUT AREAS. ALL FILL WILL BE INSTALLED USING 12" MAXIMUM COMPACTION LIFTS. PLACE ALL SLOPE PROTECTION WHERE INDICATED ON THE PLAN.
7) INSTALL CLOSED DRAINAGE SYSTEM AND OTHER UTILITIES. THE STORMWATER DETENTION/INFILTRATION BASINS SHALL BE CONSTRUCTED AS SOON AS PRACTICABLE AFTER THE PROPOSED LOCATIONS HAVE BEEN CLEARED OF VEGETATION. ALL CATCH BASINS SHALL BE COVERED WITH SILTSACK OR EQUIVALENT INLET PROTECTION.
8) GRADE PARKING AREAS TO SUBGRADE ELEVATION AND CONSTRUCT SIDE SLOPES. APPLY TEMPORARY STABILZATION MEASURES WHERE WARRANTED. REFER TO "EROSION AND SEDIMENT CONTROL" SECTION OF THIS PLAN.
9) PLACE GRAVEL SUBBASE PER TOWN SPECIFICATIONS.
10) PLACE THE BITUMINOUS CONCRETE BINDER COURSE ON PARKING AREAS.
11) GRADE SLOPES AND STABILIZE CUT AREAS AT TOE OF SLOPES. BLEND ALL SLOPES INTO EXISTING TOPOGRAPHY AND LOAM AND SEED ALL DISTURBED AREAS. SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH JUTE MESH.
12) PLACE THE FINAL WEARING COURSE OF PAVEMENT.
13) REMOVE TEMPORARY EROSION CONTROL DEVICES ONCE ADEQUATE GROWTH IS ESTABLISHED. ADEQUATE GROWTH IS DEFINED AS VEGETATION COVERING 75% OR MORE OF THE GROUND SURFACE.



(14-7) CONSERVATION AREA CEDAR POST DETAIL

NOT TO SCALE

REVISION	DATE	DESCRIPTION	BY	APPR
3	12/21/05	REVISIONS PER PLANNING BOARD CONDITIONS	NAC	BCM
2	8/15/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM
1	7/22/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM

APPLICANT:

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150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

PROJECT NO.: 21-147	DATE: MARCH 31, 2005
SCALE: AS NOTED	DWG FILE NAME: 21-147KrampConceptual
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

PREPARED BY:
McKENZIE ENGINEERING GROUP, INC.
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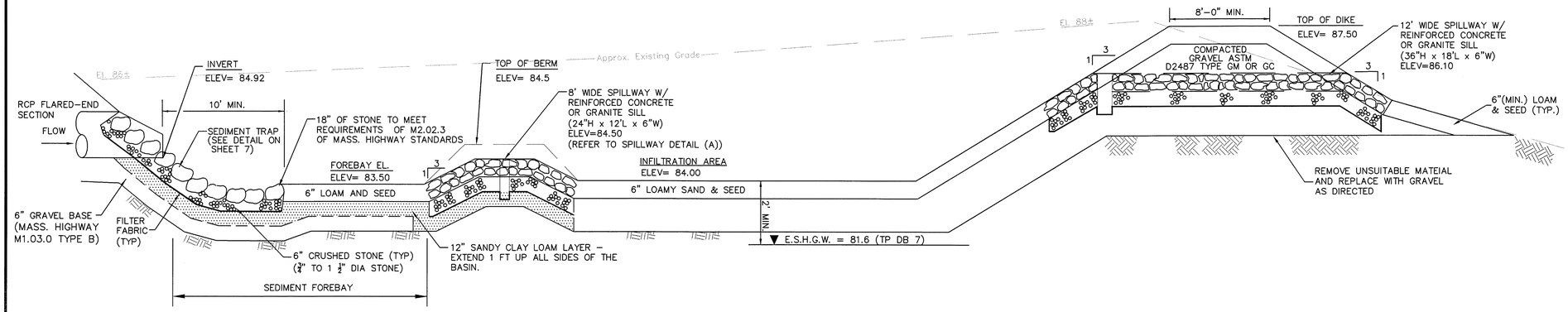
DRAWING TITLE: **CONSTRUCTION DETAILS V**

DWG. NO. **14**

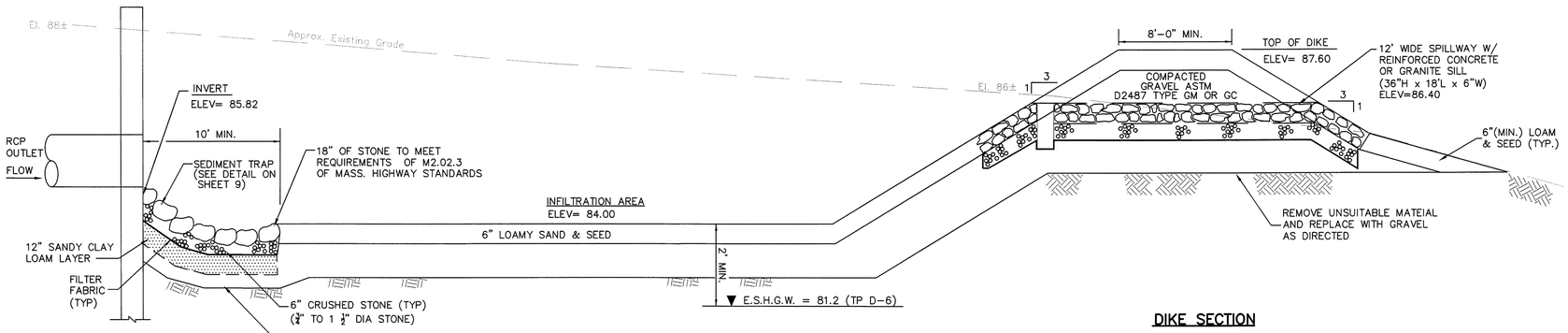


15-1 INFILTRATION / DETENTION BASIN SECTION (DB #3)

DIKE SECTION

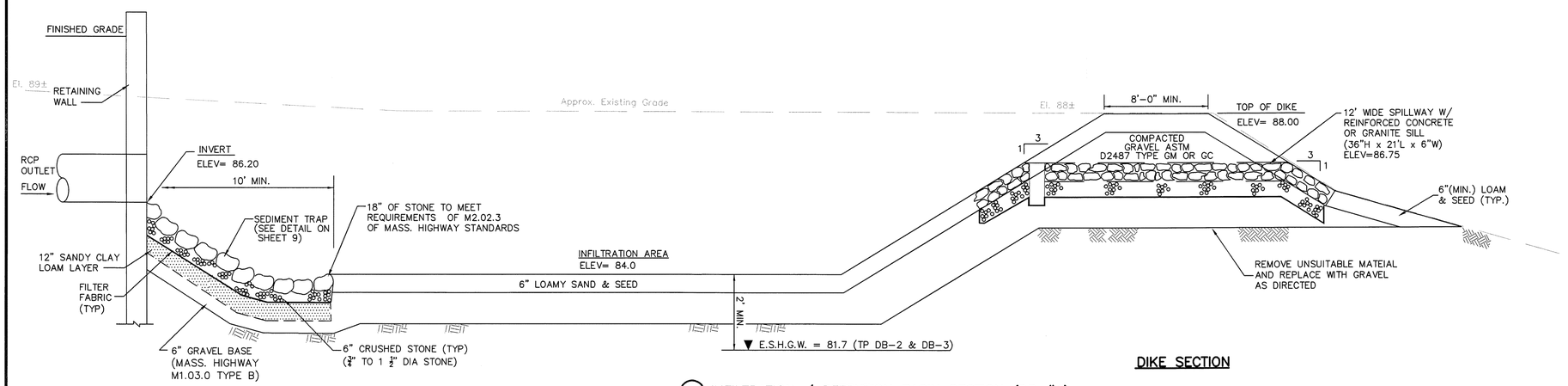
NOTES:

1. FILL AND BASE FOR DIKES SHALL INSURE WATER TIGHTNESS AND STABILITY.
2. BASIN SIDE SLOPES AND BOTTOM SHALL BE PROVIDED WITH 6" OF LOAM, SEEDED AT A RATE OF 2 POUNDS OF RED TOP, 15 POUNDS OF CREEPING RED FESCUE AND 20 POUNDS TALL FESCUE PER ACRE.
3. THE CONTRACTOR SHALL NOT DISCHARGE SEDIMENT-LADEN WATER TO INFILTRATION BASIN COMPONENTS DURING CONSTRUCTION, INCLUDING DEWATERING OR TEMPORARY SURFACE RUNOFF.
4. ALL CONTRIBUTING AREAS TO THE BASIN SHALL BE FULLY STABILIZED PRIOR TO THE BASIN BEING PLACED INTO SERVICE.
5. THE CONTRACTOR SHALL PROVIDE PROTECTION ABOVE AND AROUND THE DETENTION/ INFILTRATION BASINS FROM CONSTRUCTION VEHICLE ACTIVITY. NO HEAVY EQUIPMENT SHALL BE ALLOWED ON THE BASIN FLOORS AFTER INSTALLATION. CONTRACTOR SHALL MINIMIZE CONSTRUCTION EQUIPMENT TRAFFIC WITHIN THE BASINS AT ALL TIMES DURING AND AFTER CONSTRUCTION.



15-2 INFILTRATION / DETENTION BASIN SECTION (DB #2)

DIKE SECTION



15-3 INFILTRATION / DETENTION BASIN SECTION (DB #1)

DIKE SECTION

COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
CIVIL
No. 36917
REGISTERED PROFESSIONAL ENGINEER

REVISION	DATE	DESCRIPTION	BY	APPR
3	12/21/05	REVISIONS PER PLANNING BOARD CONDITIONS	NAC	BCM
2	8/19/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM
1	7/22/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM

APPLICANT:

WITSOP-1, LLC
150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

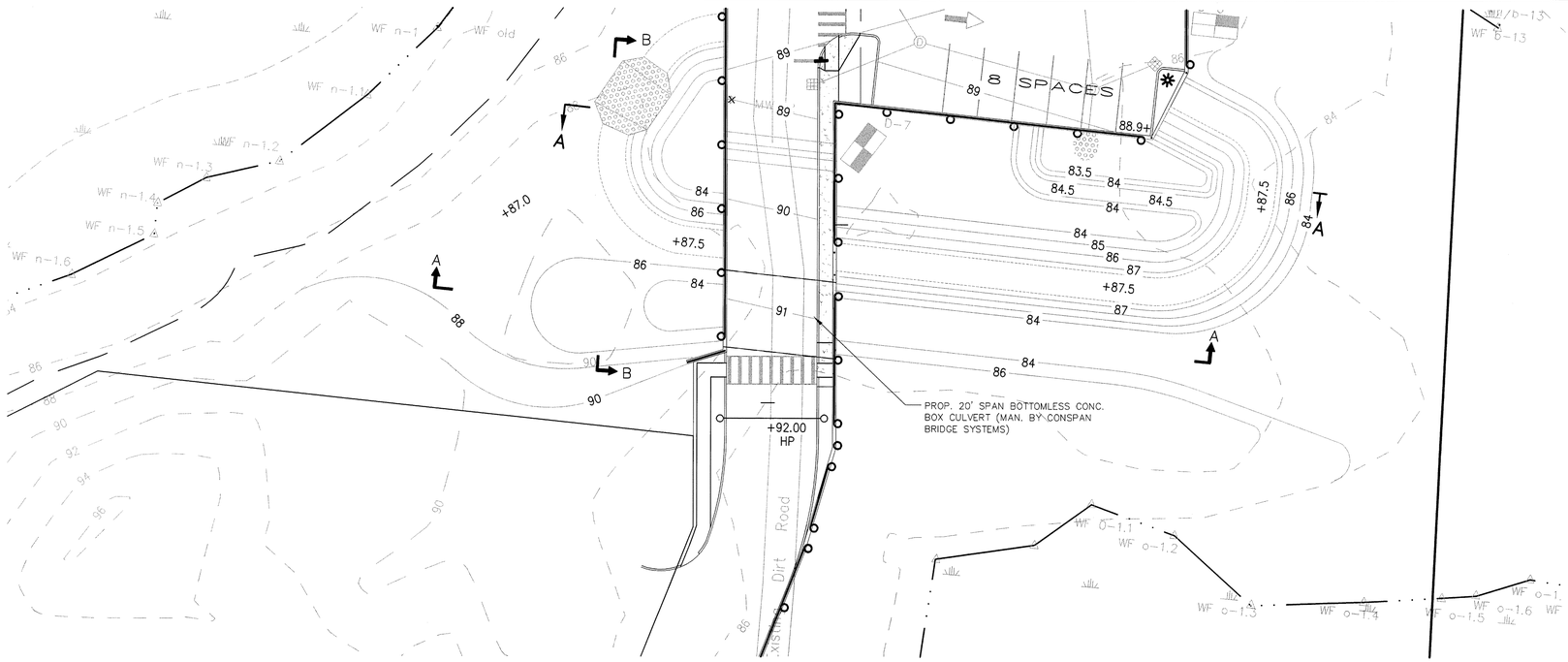
PROJECT NO.: 21-147	DATE: MARCH 31, 2005
SCALE: AS NOTED	DWG FILE NAME: 21-147KrampConceptual
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

PREPARED BY:

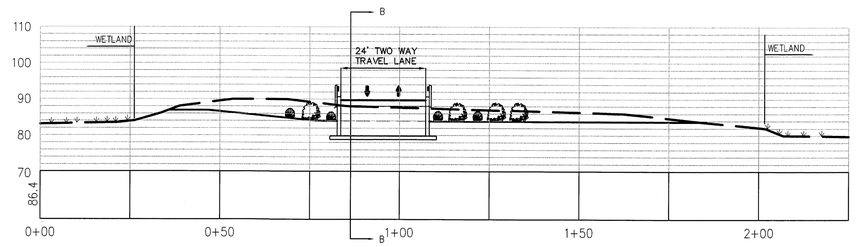
McKENZIE ENGINEERING GROUP, INC.
PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT
325 CENTRAL STREET, SAUGUS, MASSACHUSETTS 01906
PHONE: (781) 941-2211 FACSIMILE: (781) 941-2662
150 LONGWATER DRIVE, SUITE 101, NORWELL, MASSACHUSETTS 02061
PHONE: (781) 792-3900 FACSIMILE: (781) 792-0333

DRAWING TITLE: **CONSTRUCTION DETAILS VI**

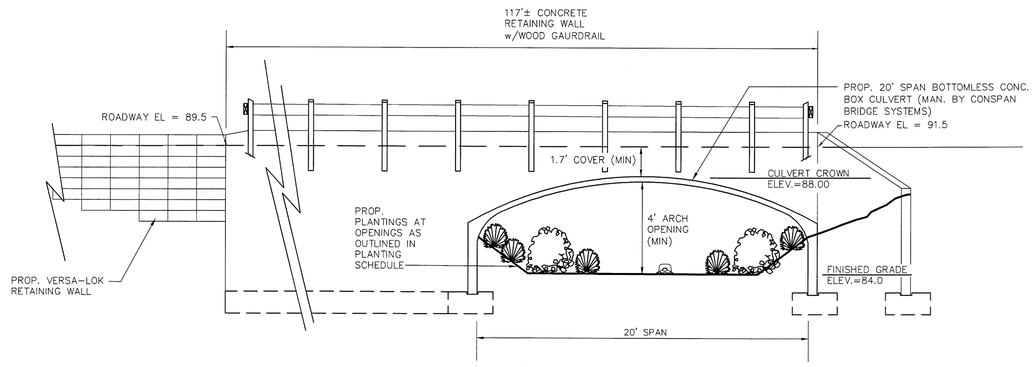
DWG. NO. **15**



16-1 **TURTLE CROSSING**
SCALE: 1" = 20'



SECTION A–A
SCALE: 1" = 20'



SECTION B–B
SCALE: N.T.S.

PLANTING SCHEDULE

NAME	QUANTITY
INKBERRY/ILEX GLABRA 'COMPACTA' (FACW–) BROADLEAF EVERGREEN	4
KALMIA LATIFOLIA 'ELF' OR 'MINUET'/MOUNTAIN LAUREL (FACU) BROADLEAF EVERGREEN	4
REDTWIG DOGWOOD/CORNUS SERICIA (FACW+) BROADLEAF DECIDUOUS	4
BLACK CHOKEBERRY/ARONIA MELANOCARPA (FAC) BROADLEAF DECIDUOUS	4

SEED: NEW ENGLAND EROSION CONTROL/RESTORATION MIX FROM NEW ENGLAND WETLAND PLANTS

NOTE: FINAL LOCATIONS TO BE DETERMINED IN THE FIELD BY A WETLANDS SCIENTIST.

COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
CIVIL
No. 36917
REGISTERED PROFESSIONAL ENGINEER

REVISION	DATE	DESCRIPTION	BY	APPR
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2	8/19/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM
1	7/22/05	REVISIONS PER PLANNING BOARD REVIEW	DWK	BCM

APPLICANT:

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NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
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HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

PROJECT NO.: 21–147	DATE: MARCH 31, 2005
SCALE: AS NOTED	DWG FILE NAME: 21–147KrampConceptual
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

PREPARED BY:
McKENZIE ENGINEERING GROUP, INC.
PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT
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150 LONGWATER DRIVE, SUITE 101 NORWELL, MASSACHUSETTS 02061
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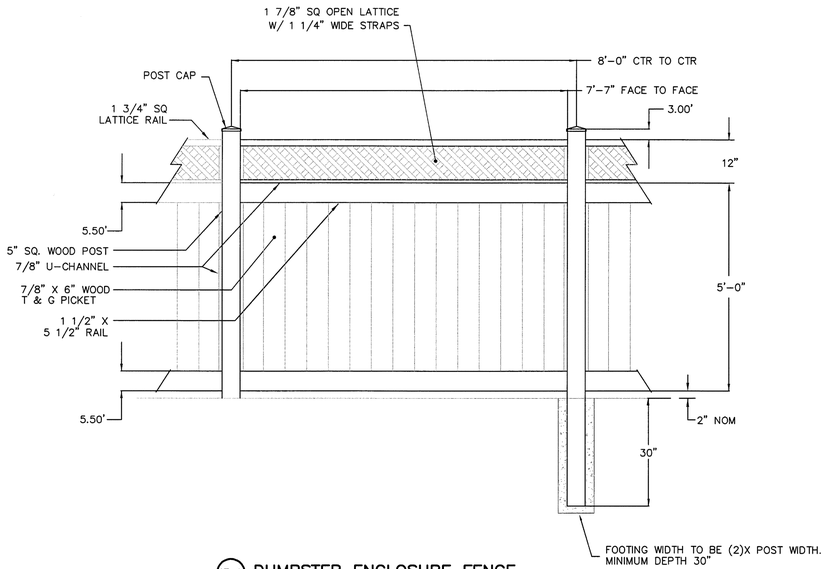
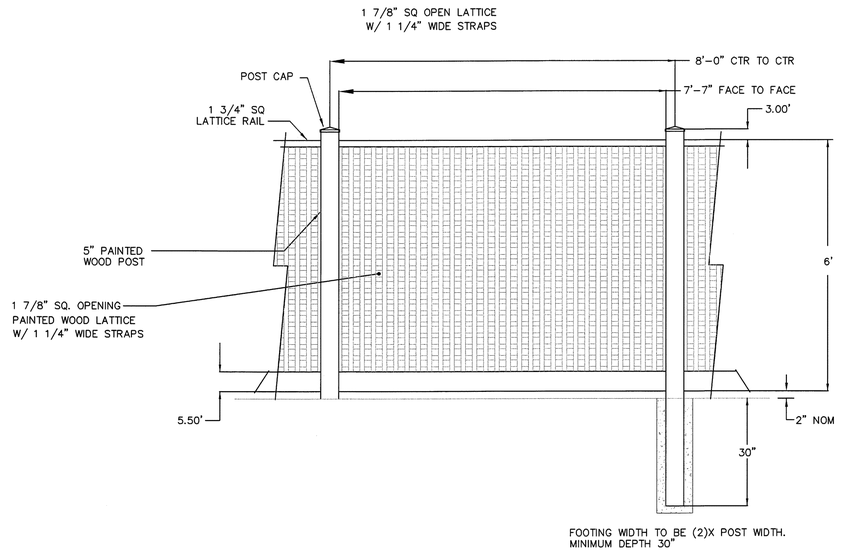
DRAWING TITLE:
CONSTRUCTION DETAILS VI

DWG. NO.
16



17-1 DUMPSTER ENCLOSURE FENCE
SCALE: N.T.S.



17-2 LOADING AREA SCREENING FENCE
SCALE: N.T.S.

COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
CIVIL
No. 36917
REGISTERED PROFESSIONAL ENGINEER

REVISION	DATE	DESCRIPTION	BY	APPR

APPLICANT:

WITSOP-1, LLC
150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF
LOTS 13, 15 & 20)

PROJECT NO.: 21-147	DATE: DECEMBER 21, 2005
SCALE: AS NOTED	DWG FILE NAME: 21-147KrampConceptual
DESIGN BY: DEANA BURRILL	CHECKED BY: BRADLEY C. McKENZIE, P.E.

PREPARED BY:

McKENZIE
ENGINEERING
GROUP, INC.

PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT
325 CENTRAL STREET — SAUGUS, MASSACHUSETTS 01906
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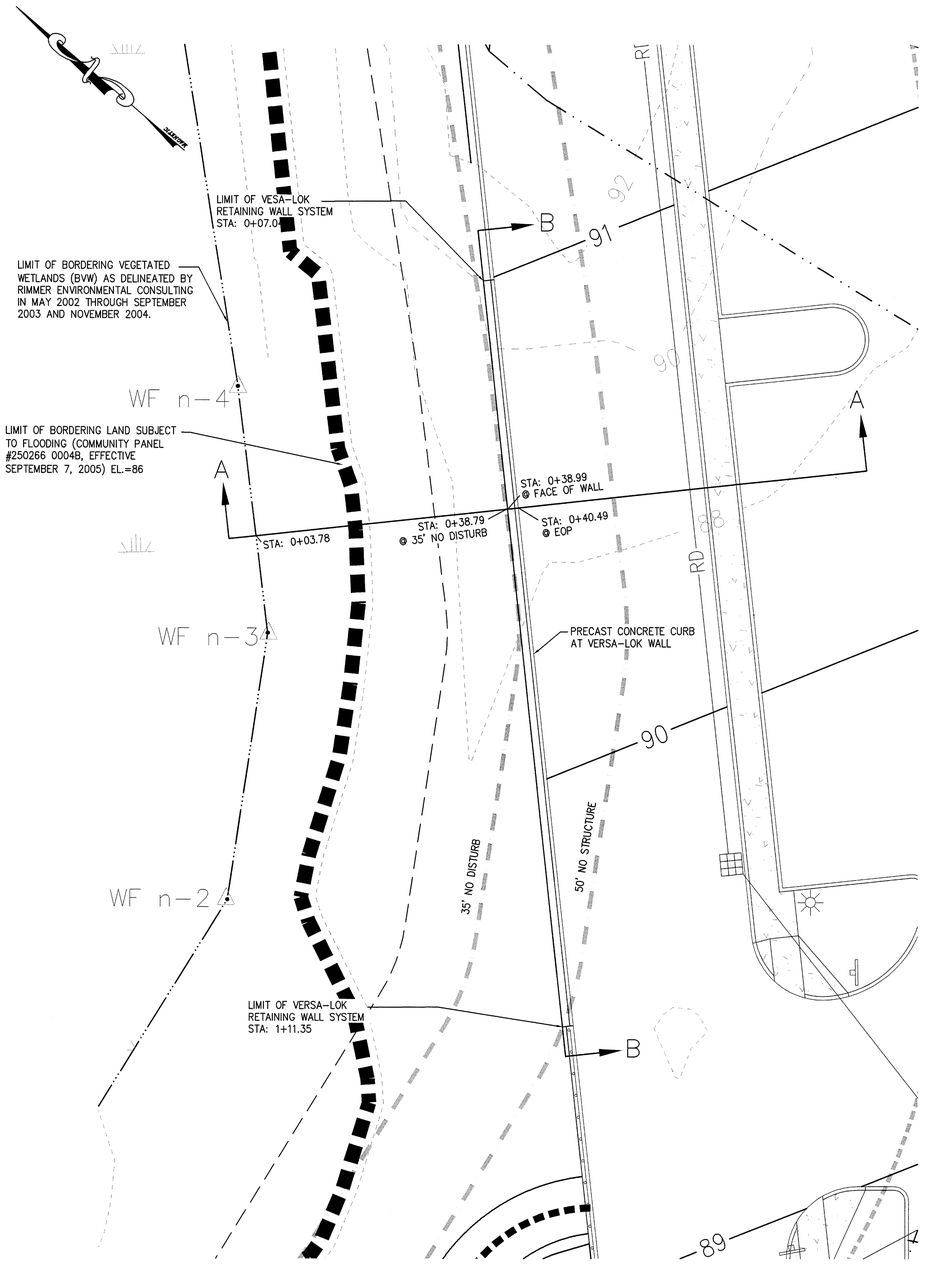
150 LONGWATER DRIVE, SUITE 101 — NORWELL, MASSACHUSETTS 02061
PHONE: (781) 792-3900 — FACSIMILE: (781) 792-0333

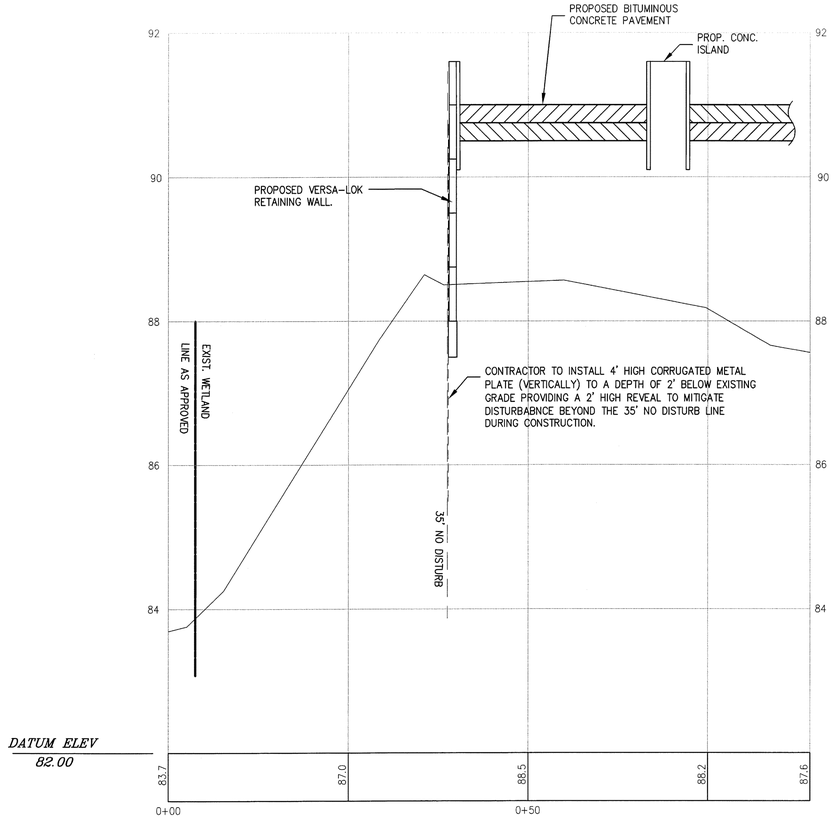
DRAWING TITLE:

CONSTRUCTION DETAILS VII

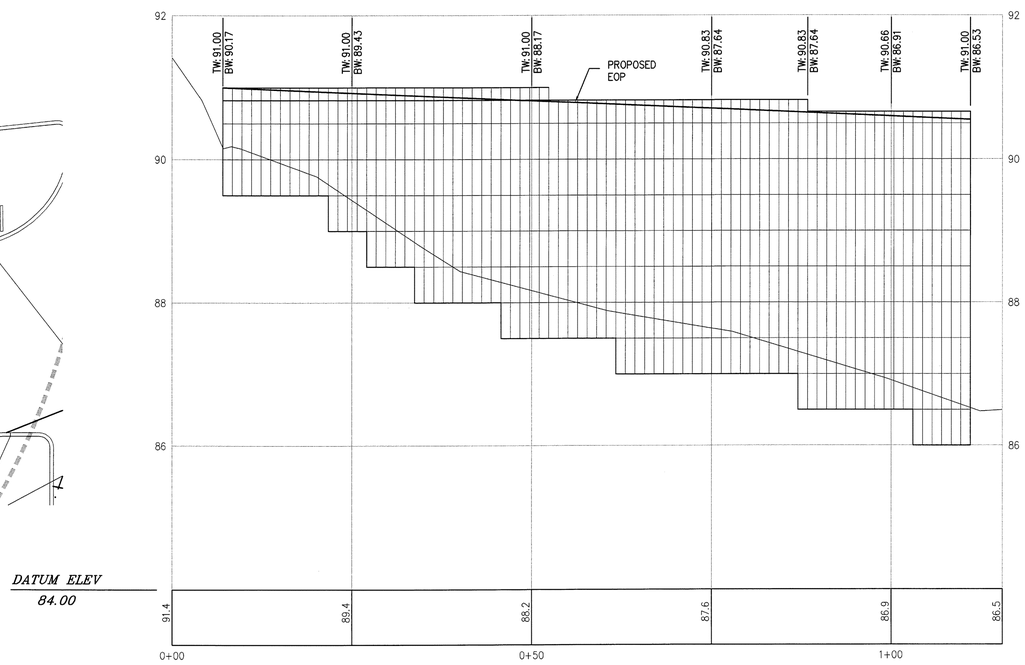
DWG. NO.
17



PLAN
1" = 10'



SECTION A-A
1" = 10' HORIZ.
1" = 1' VERT.



SECTION B-B
1" = 10' HORIZ.
1" = 1' VERT.

NOTES:

1. A REGISTERED LAND SURVEYOR SHALL PROPERLY DELINEATE THE PROPOSED LIMIT OF WORK ALONG THE NORTHERN EDGE OF THE PROPOSED DRIVEWAY IN THE FIELD PRIOR TO CONSTRUCTION FOR APPROVAL BY THE TOWN PLANNER AND CONSERVATION AGENT. THE STAKES DELINEATING THE LIMIT OF WORK SHALL NOT BE REMOVED AT ANY TIME DURING CONSTRUCTION.
2. CONSTRUCTION SHALL NOT PROCEED UNTIL THE LIMIT OF WORK HAS BEEN INSPECTED AND APPROVED BY THE TOWN PLANNER AND CONSERVATION AGENT OF THE TOWN, AND UNTIL THE SEDIMENT BARRIER HAS BEEN INSTALLED AT THIS WORK LIMIT.

COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
CIVIL
No. 36917
REGISTERED PROFESSIONAL ENGINEER

REVISION	DATE	DESCRIPTION	BY	APPR

APPLICANT:

WITSOP-1, LLC
150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

VILLAGE SQUARE
644 WASHINGTON STREET
IN
HANOVER, MASSACHUSETTS
(TAX MAP 39, LOT 12 & PORTIONS OF LOTS 13, 15 & 20)

PROJECT NO.: 21-147	DATE: DECEMBER 21, 2005
SCALE: AS NOTED	DWG FILE NAME: 21-147KrampConceptual
DESIGN BY: NATHAN A. COLLINS	CHECKED BY: BRADLEY C. McKENZIE, P.E.

PREPARED BY:

McKENZIE ENGINEERING GROUP, INC.
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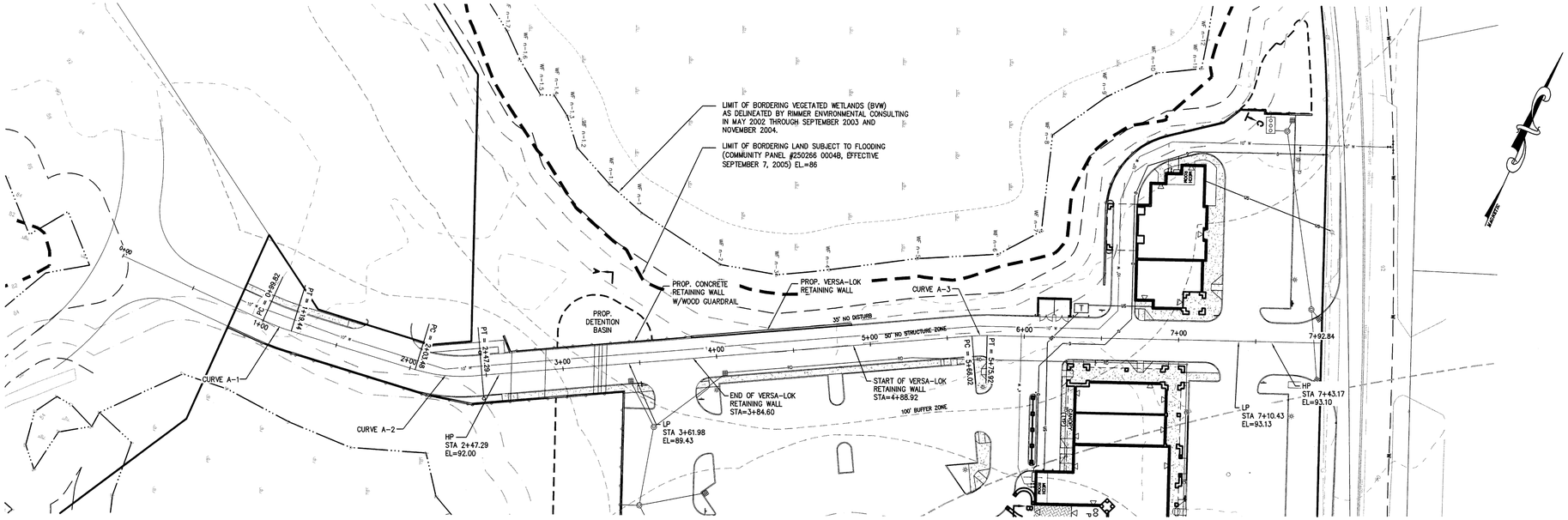
PHONE: (781) 792-3900 FACSIMILE: (781) 792-0333

DRAWING TITLE:

CONSTRUCTION DETAILS IX

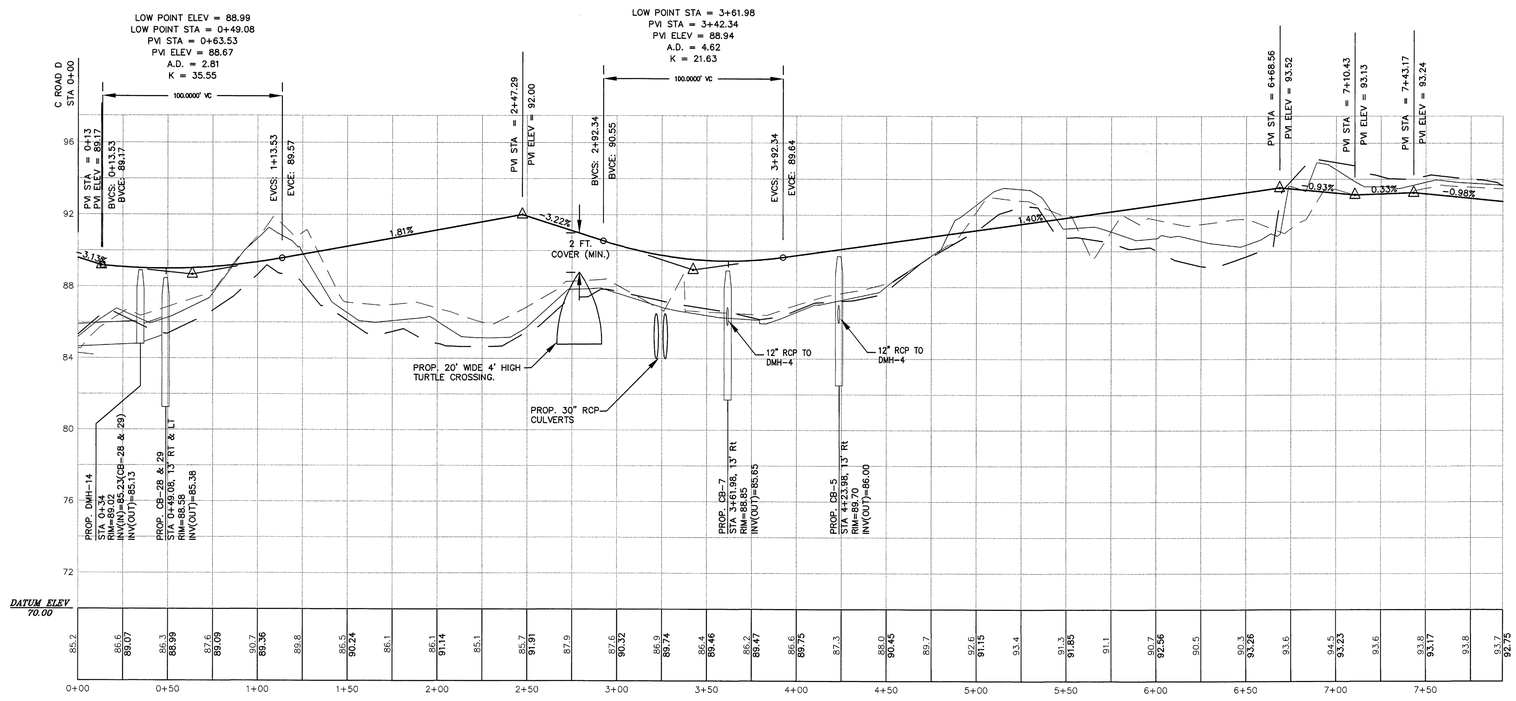
DWG. NO.
18



PLAN
1" = 40'

HORIZONTAL CURVE TABLE

DESC.	RADIUS (FT.)	LENGTH (FT)	DELTA (DMS)	START STA	END STA
A-1	150.00	19.62	7°-29'-43"	0+99.82	1+19.44
A-2	102.00	43.80	24°-36'-19"	2+03.48	2+47.29
A-3	93.00	9.89	6°-05'-40"	5+66.02	5+75.92



PROFILE
1" = 40' HORIZ.
1" = 4' VERT.

COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
CIVIL
No. 36917
REGISTERED PROFESSIONAL ENGINEER

REVISION	DATE	DESCRIPTION	BY	APPR
1	12/21/05	REVISIONS PER PLANNING BOARD CONDITIONS	NAC	BCM

APPLICANT:

WITSOP-1, LLC
150 LONGWATER DRIVE, SUITE 202
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DESIGN BY: NATHAN A. COLLINS	CHECKED BY: BRADLEY C. McKENZIE, P.E.

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DRAWING TITLE:
DRIVEWAY LAYOUT & PROFILE PLAN

DWG. NO.
19

L=208.15'
R=720.00'
L=47.07'
R=1840.00'
L=152.93'
R=720.00'
S16°25'44"E
46.78'
L=20.87'
R=30.00'
L=20.61'
R=30.00'
S 16°25'44" E 322.61'
N73°34'16"E
212.70'
N73°34'16"E
45.97'
N16°25'44"W
7.00'
N73°34'16"E
94.50'
N16°25'44"W
3.61'
N73°34'16"E
63.88'
PROPOSED 26'-44' WIDE
ACCESS EASEMENT
(25,367 SF)
S22°31'24"E
13.77'
N67°28'36"E
186.00'
LIMIT OF AQUIFER PROTECTION ZONE
N67°28'36"E
295.86'
N22°31'24"W
7.72'
N67°28'36"E
62.27'
S16°24'07"E
7.77'
N67°28'36"E
82.18'
S39°26'50"E
9.93'
N67°28'36"E
21.29'
N67°28'36"E
14.21'
S22°31'24"E
4.50'
L=43.78'
R=115.00
172.09
N16°25'49"W
25.97
N67°28'36"E
76.83
N89°17'17"E
N89°17'17"E
84.04'
PROPOSED 26'-44' WIDE
ACCESS EASEMENT
(25,367 SF)
57.80
S51°15'56"E
L=21.26'
R=162.50
S83°12'59"E
19.14'
64.85
N08°26'21"E
130.56
N05°26'24"E
151.12
N35°23'30"E
97.03
N50°07'52"W
S 70°17'37" W 800.98'
S 24°37'16" E
73.72'
200.52
S80°19'22"E
N 40°32'23" E
200.00'
91.92
N40°32'23"E
S 48°57'42" E 150.00'
150.01
S48°57'42"E
182.84
N49°26'14"W
N 40°33'46" E 400.01'
337.60
N40°33'46"E
S 40°33'46" W 577.72'
S 54°28'49" E 232.41'
COMMERCIAL DISTRICT
RESIDENCE A DISTRICT
COMMERCIAL DISTRICT
LIMIT OF BORDERING LAND SUBJECT TO FLOODING
(COMMUNITY PANEL #250266 0004B, EFFECTIVE SEPTEMBER 7, 2005)
EL=86
LIMIT OF BORDERING VEGETATED
WETLANDS (BVW) AS DELINEATED
BY RIMMER ENVIRONMENTAL CONSULTING
IN MAY 2002 THROUGH SEPTEMBER 2003
AND NOVEMBER 2004.
CBN 10169
10280
R=84.72
10
Mag Nail
WF N-1.13 – WF N-1.45
WF n-1 – WF n-16
WF 0-1 – WF 0-12END
wfl/b-1 – wfl/b-13
N
GRAPHIC SCALE
0' 40' 80' 120'
(IN FEET)
1 inch = 40 ft.
COMMONWEALTH OF MASSACHUSETTS
BRADLEY C. McKENZIE
CIVIL
No. 36917
REGISTERED
PROFESSIONAL ENGINEER

REVISION	DATE	DESCRIPTION	BY	APPR

APPLICANT:

WITSOP-1, LLC

150 LONGWATER DRIVE, SUITE 202
NORWELL, MASSACHUSETTS 02061

PROJECT:

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644 WASHINGTON STREET
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HANOVER, MASSACHUSETTS
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PROJECT NO.: 21-147	*DATE: SEPTEMBER 19, 2005*
SCALE: 1"=40'	*DWG FILE NAME: 21-147KrampConceptual*
DESIGN BY: DEANA BURRILL	*CHECKED BY: BRADLEY C. McKENZIE, P.E.*

PREPARED BY:

McKENZIE ENGINEERING GROUP, INC.

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DRAWING TITLE: ***ACCESS EASEMENT PLAN***

DWG. NO. **20**